IIb.5.A Scored for EPI CC

Superfund Site Strategy Recommendation Region 6

Site Name: Southwestern Electric Power Company Site Number: TXD 000 726 380

Alias Site Name(s): _____

Address: Route 2, Box 165

City/County or Parish/State/Zip: Hallsville, Harrison, Tx 75650

Recommendation:

☒ 1. No further remedial action planned under Superfund.

☐ 2. Further pre-remedial investigative action needed under Superfund:

PA _____
SSI _____ Priority: High____ Medium____
LSI _____
Other _____
To be performed by _____

☒ 3. Action may be appropriate under other authority: RCRA ✓
NPDES _____ SPCC _____ 404 _____ TSCA _____ UIC _____
SMCRA _____ State _____ Other _____.

Discussion:

The H.W. Pirkey Power plant is lignite fired. FGD sludge, which is mixed with fly ash to produce a filter cake is deposited into a landfill on site. Limestone runoff wastewater is also generated. There are 12 solid waste management units at the site: (1) metal cleaning surface impoundment (2) Chemical Sump / Neutralization System (3) drum storage area (4) scrubber sludge landfill (5) sanitary landfill (6) landfill detention pond (7) secondary ash pond (8) limestone runoff basin (9) lignite runoff basin (10) Bottom Ash Basin No 1 (11) Bottom ash Basin No. 2 (12) Sewage pond.

Pathway Characteristics: Air - the contaminants of concern are primarily heavy metals in the form of biocides and sludges; migration into air pathways is unlikely. No documented air release. Groundwater - The closest known drinking water well to the site has a total depth of 465 feet and a static water level of 95.8 feet. There are 10 monitoring wells located on site. Surface water - there appears to be no substantial targets near site. Preliminary HPR score of the site is low. The parent company of SWEPCO net worth is excellent. Closure of SWMU under RCRA is more appropriate. No further action by Superfund deemed necessary.

Copies to (please list): RCRA, TWC

Recommended By: Bill Taylor Date: 6-16-89

Approved By: Bobby Williamson Date: 6/27/89

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Dallas, Texas
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214/744-1641

ICF TECHNOLOGY INCORPORATED

TO: Ed Sierra, EPA Region VI, RPO

THRU: K. H. Malone, Jr., FITOM

THRU: Timothy A. Hall, AFITOM

FROM: Pam Fetzer, FIT Geologist

DATE: June 2, 1989

SUBJECT: Preliminary Assessment under the Environmental Priorities Initiative Program for Southwestern Electric Power Company - H. W. Pirkey Power Plant, Hallsville, TX CERCLIS # TXD000726380, TDD # F-6-8904-63, PAN FTX0937RAA

1. SITE INFORMATION

The H. W. Pirkey Power Plant is located south of Hallsville on Route 2, Box 165, Hallsville, Texas. Site coordinates are 32° 27' 45" N latitude and 94° 28' 58" W longitude (2). The facility is publicly owned by Southwestern Electric Power Company (SWEPCO) of Shreveport, Louisiana.

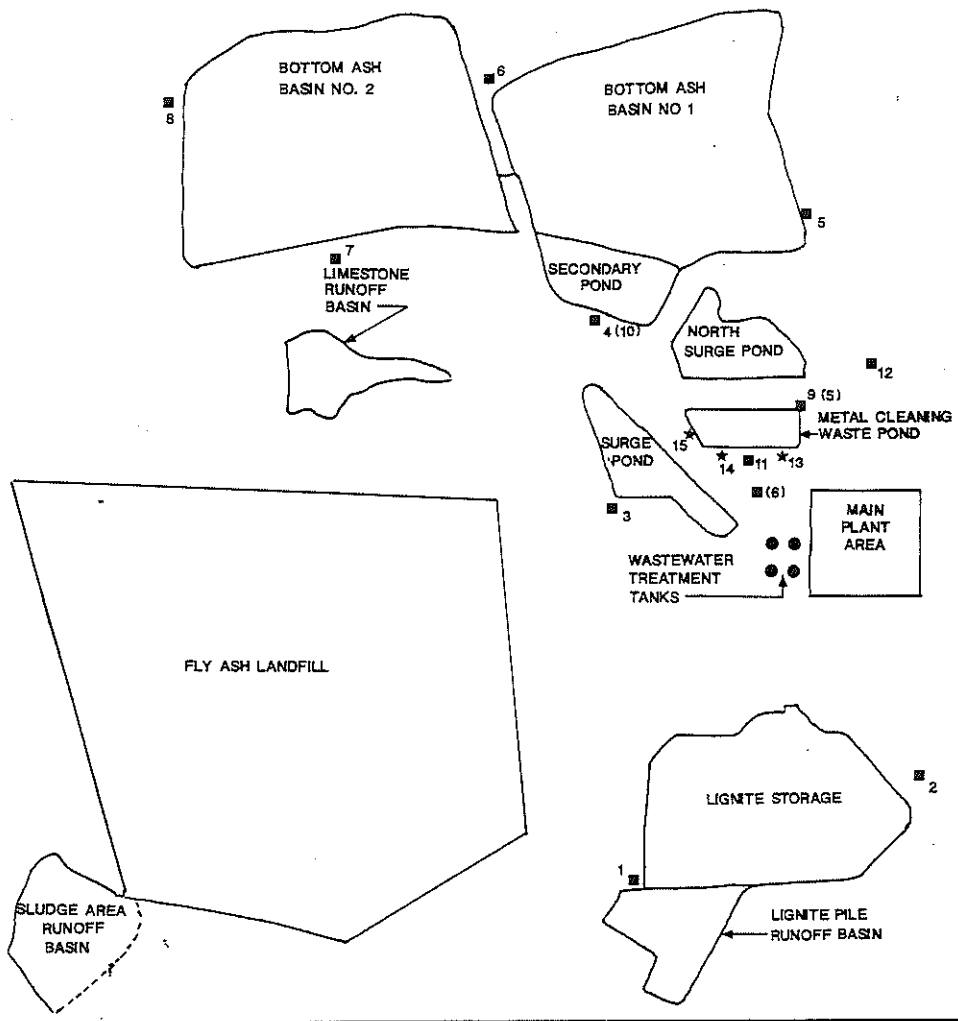
The purpose of this investigation is to perform a Preliminary Assessment (PA) under the Environmental Priorities Initiative (EPI) Program for the Environmental Protection Agency (EPA). The FIT was also tasked to determine the net worth and sales value of the company.

2. BACKGROUND/OPERATING HISTORY

The Pirkey Power Plant began production January 3, 1985 as a lignite fired power plant. The plant burns 13,000 tons of coal each day when operating at full capacity. Pirkey's boilers produce 4.9 million pounds of steam per hour from its 56 burners which generate electricity at 24,000 volts.
In the production process, lignite is strip mined, crushed to a fine powder and blown into the furnace. Electrostatic precipitators are used to remove the fly ash from the boiler furnace. Scrubbers are used to remove sulfur dioxide from combustion gases in the furnace before they are dispersed by the stack. The combustion gases are routed from the furnace through the flue-gas desulfurization (FGD) system. The system combines sulfur oxides (from the flue-gas) and an alkaline calcium solution which contains hydroxides and carbonates. The resultant product is FGD sludge, which is mixed with fly ash to produce a filter cake, and is then deposited into the fly ash landfill on-site (Figure 1). Limestone runoff wastewater (Class I, non-hazardous, TWC

PRELIMINARY REPORT
This does not constitute
final opinion of EPA

Reviewed by GILES
Date 6/8/89
BT



(5) ESPEY, HUSTON MW NO.
■ MONITORING WELLS
★ PROPOSED MONITORING WELLS

N

Facility Sketch
SOUTHWESTERN ELECTRIC POWER CO.
PIRKEY PLANT
HALLSVILLE , TX
CERCLIS NO. TXD000726380

FIGURE 1
FROM
REFERENCE 6

106870) is generated when rainfall has come in contact with limestone, which is used in the alkaline calcium solution. The runoff is directed to the runoff basin and retained until discharged via an EPA permit (7, pg. 2). Bottom ash is the residue left in the bottom ash hopper located in the main boiler furnace. The ash is sluiced to two primary bottom ash settling basins and then to the secondary settling basin. The effluent is discharged and regulated under the NPDES and TDWR Wastewater Permits. The sediment from the settling basins is periodically removed to the Fly Ash/FGD Sludge/Wastewater Treatment Solids/Bottom Ash Landfill (Fly Ash Landfill). Wastewater treatment solids are also produced from the treatment of the bottom ash transport system blowdown and material storage runoff. The solids are periodically removed and disposed in the Fly Ash Landfill. Upon initial start-up, an acid solution is sent through the boiler to inhibit corrosion and scale. The effluent is discharged into the metal cleaning waste impoundment (6, Att. 7).

The waste components in fly ash, bottom ash and wastewater treatment solids are oxides of silica, iron, aluminum, titanium, calcium, magnesium, potassium, sodium, sulfur and phosphorus.

Varsol (mineral spirits) and waste oil are drummed and stored in a container storage building until they are reclaimed by Starr Solvents of Longview, Texas (6, Att. 7, pg. 4). SWEPCO also has a plant refuse landfill which receives plant generated trash. The landfill is not covered but no odors emanated from it (6, Att. 7, pg. 6).

The metal cleaning surface impoundment effluent has a pH of 1.53, which is considered hazardous. The effluent was generated when the boiler was cleaned for start-up purposes (6, Att. 7). In the March 5, 1985 plant inspection, it was noted that Halliburton used 5% hydrochloric acid and 0.25% ammonia bifluoride (properly known as ammonium difluoride) to clean the boiler (6, Att. 7, pg. 17). The Industrial Solid Waste Registration for 90 day Generator Status (Part A) lists the following hazardous wastes: spent halogen solvents, thio carbamate, 1,1,2,2-tetrachloroethene, asbestos, trichloromethane, acetone, methylbenzene and methanol. The quantity and location of these constituents are not known (6, Att. 7, pg. 6).

Analysis of a water sample, collected by the TWC on February 25, 1985 from the metal cleaning surface impoundment, detected a pH of 1.53. The duplicate sample showed a pH of 1.63. Quality control was performed by East Texas Testing Laboratory, Inc. of Longview, Texas (6, Att. 7, pg. 3,4). The sample was designated EPA WP 882-2 of 7.8/7.8.

On May 9, 1985, a composite drain analysis was conducted on effluent that was produced as a result of the "citrosolv" cleaning method. 30,000 gallons of effluent were generated from a boiler at SWEPCO's Arsenal Hill Plant. SWEPCO maintains that approximately the same material will come from the Pirkey boiler. The effluent contained the following constituents:

Pounds	Constituents
1316	Magnetite (Fe_3O_4)
305	Copper (Cu)
25	Nickel Oxide (NiO)
56	Zinc Oxide (ZnO)
88	Apatite $Ca_5(PO_4)_3(OH)$
12	Brucite $[Mg(OH)_2]$
8	Silica (SiO_2)

Samples of waste oil from the container storage area were analyzed by SWEPCO on March 5, 1986 for EP Toxicity (EP Tox) values for arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver, all of which registered below the detection limits (6, Att. 22, pg. 3). On April 30, 1986, the TWC sampled the metal cleaning waste impoundment sludge and liner core for pH values which ranged from 3.5 to 7.53. The bottom liner and the lower half of the dike were sampled by the TWC on November 5, 1987 to verify removal of the contaminated sludge and a portion of the clay liner. Analysis of samples revealed a pH range of 3.28 to 6.44 (8).

EP TOX analyses were conducted by SWEPCO at the Oil House (location undetermined) on waste lubricating greases, on January 30, 1987 for detection of arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, vanadium and zinc. Analytical results registered below detection limits, except for the following:

	Zinc	Copper	Vanadium
Lidok EP-2 (A)	7.4		
Lidok EP-1 (B)	6.7		
Unirex N-2 (C)	3.7		
Unirex N-2 (D)	0.40	.06	0.8
Lidok EP-1 (E)	8.8		

Values are reported in mg/l. The analysis method was not reported (7, pg. 4, 5, 10, 15, 16). QA/QC procedures and duplicate samples were not analyzed.

An off-site reconnaissance inspection was not conducted because the plant impoundments are not accessible via a public road and the interior of the container storage area is not accessible to the public.

The plant was issued a Texas Air Control Board construction permit (C-6269), Texas Air emissions permit (PSD - TX - 64) (6, Att. 2, pg. 2), Texas Department of Water Resources Wastewater Permit (02496) (6, Att. 2, pg. 2) and the Texas Department of Water Resources Solid Waste Registration Permit

(33240). The Solid Waste Registration Permit number has been assigned. The plant was not registered as of May 1985 but was registered by November 17, 1987 (6 Att. 6, pg. 2).

The FIT obtained information for this PA from the files of the TWC Solid Waste Management Division, RCRA and NPDES.

No emergency or remedial action is known to have taken place at the Pirkey Power Plant. The parent company of SWEPCO is the Central and South West Corporation whose net worth in 1989 is $2,514,000,000 (10). The sales value listed of SWEPCO in 1989 is $723,000,000.00 (9).

3. UNIT DESCRIPTION/WASTE CONTAINMENT/HAZARDOUS SUBSTANCE IDENTIFICATION

The following section describes 12 solid waste management units (SWMUs) at the Pirkey Power Plant. All of the SWMUs are RCRA-regulated based on CFR 264.90, Sub-Section F.

1. Metal Cleaning Surface Impoundment

Located northwest of the main plant area and south of bottom ash basin No. 1 (Figure 1), this unit stores acid waste that was used to clean the boilers during the start-up phase of the plant. The effluent was scheduled to be neutralized prior to treatment and discharged through an NPDES outfall. During its February 21, 1985 inspection, the TWC detected a pH of 1.53, which indicated that the waste was not neutralized. As a result, the TWC required that the unit be closed. A large hole was observed in the concrete splash pads at the impoundment (6, Att. 6, pg. 4). SWEPCO submitted a closure plan to the TWC on May 14, 1985, but the unit has not been closed. The impoundment had been used only once for metal cleaning wastewater. Cooling reservoir water, contaminated with small amounts of fly ash, was disposed in this SWMU, as the result of air preheater washes. The unit was installed on November 4, 1984 and has a 4,350,000 gallon capacity. During the Loss of Interim Status (LOIS) inspection, on July 24, 1986, the unit had 90% freeboard (6, Att. E-1, E-2). The earthen dike has eroded and has no protective cover to minimize wind and water erosion (11). No overflowing has been reported. If the impoundment dikes are breached, the drainage pathway would be to the southeast toward the Brandy Branch cooling pond which is used as cooling water for the power plant (6, EPA Form 3510-3, pg 5). The permeabilities of the liner and dike are not known.

2. Chemical Sump/Neutralization System (Wastewater Treatment System)

According to the NPDES and TDWR wastewater permits, when the quality of the water warrants treatment prior to discharge, the unit will receive demineralizer regenerant wastewater (both acid and caustic), laboratory wastes, bottom ash transport system blowdown, material storage runoff and metal cleaning wastewater. The unit was active when the plant began production on January 3, 1985 (6, Att. B-4). The laboratory wastes include organic solvents and other chemicals used in analyses for NPDES

permits (6, Att B-5). The demineralizer regenerant wastes neutralize each other and are stored in neutralization tanks, which are also called wastewater treatment tanks and are located west and adjacent to the main plant area (Figure 1). The exact quantity of waste received is not known. The chemical sump is underground in the main plant area and has a synthetic liner of undetermined dimensions. Wastes are continuously neutralized and sent to the bottom ash ponds. The unit is located in the main plant area. The direction of the drainage pathways have not been determined.

3. **Drum Storage Area**

Located adjacent to the plant refuse landfill (6, Att. 22), this unit stores waste lubricating oil, Varsol and spent solvent prior to recycling. The spent solvent is generated during equipment cleaning. Approximately 5,000 gallons per year of waste oil are generated at the facility. One 55 gallon drum of Varsol has been used since plant start-up; Varsol use is now being phased out (6, Att. F-3). During the March 5, 1985 inspection, it was noted that the drums were not labeled or dated. This unit is a less than 90 day storage facility and must maintain a 30-gallon maximum to qualify as a small quantity generator (6, Att. 7, pg. 5, 17). Containment measures include a metal roof, concrete floor and drain with a catch basin in the middle to collect spillage which can then be pumped to a drum. No other containment measures are known to exist.

An April 11, 1986 inventory of the drum storage area, conducted by SWEPCO, counted the following stock: 4 barrels of Varsol solvent; 100 empty barrels, crushed and deposited in the open plant refuse cell, sold for scrap, or taken by employees; 30 barrels of rainwater, which were emptied into the plant's wastewater oil skimmer pit and disposed in the landfill; 15 barrels of waste oil, which have been sold to a reclaimer; one barrel of motor grease (6, Att. 22).

The drainage pathway is southeast of the site toward Brandy Branch cooling pond (2).

4. **Scrubber Sludge Landfill (Fly Ash Landfill)**

Located west of the main plant area, the landfill, also known as the Fly Ash Landfill (Figure 1), accepts fly ash, scrubber sludge, bottom ash and wastewater treatment solids. The clay-lined unit has a capacity of 13,000,000 cubic yards. 15.78 active acres (6, Att. 6, pg.3) of the original 129.65 acres are accepting the previously mentioned wastes. The surface drainage flows to the southeast toward Brandy Branch cooling pond (2). Its dimensions have not been determined.

5. **Sanitary Landfill**

The landfill holds general plant refuse such as office trash, wood, small metal items and one barrel of grease-contaminated dirt from the drum storage area. Its dimensions are 100 feet long by 30 feet wide by 10 feet deep. It became active in January, 1985 (6, Att. 3, pg. 10). The location

and pathway directions are not known.

6. **Landfill Detention Pond**

The unit is located adjacent to the Scrubber Sludge Landfill and southwest of the main plant area. It is used to retain rainfall that has come into contact with the scrubber sludges. The rain is retained until discharged via an NPDES permit. The plant began production and the unit became active on January 3, 1985 (6, Att. B-4). This unit is also known as the sludge area runoff basin (Figure 1). The material in the pond is classified by the TWC as a Class I non-hazardous waste unit (7). The drainage from this unit is to the south to Brandy Branch cooling pond (2). The capacity of the unit is not known.

7. **Secondary Ash Pond**

The clay-lined, 2.6 acre unit (6, Att. 6 pg. 3) is located northwest of the main plant area and adjacent to SWMU #10 (Figure 1). The unit became active when the plant began production (6, Att. B-4). The unit receives ash transport water that sluices the bottom ash from the boiler to the secondary ash pond. It is a Class I, non-hazardous waste unit (7). Brandy Branch, southeast of the unit, is the probable direction of the surface drainage (2). The dimensions of the unit are not known.

8. **Limestone Runoff Basin**

The clay-lined (6, Att. 6, pg. 3) unit is located northwest of the main plant area and adjacent to SWMU #11 (Figure 1). The unit has been active since January 3, 1985. The limestone runoff wastewater is generated by rainwater leaching the limestone used in the FGD process and dissolving minor amounts of calcium carbonate away from the limestone pile. The dimensions and capacity of the unit are not known. Brandy Branch cooling pond, located on the southeast side of the site, would receive the surface drainage from this unit (2).

9. **Lignite Runoff Basin**

Located southwest of the main plant area and adjacent to the lignite storage area, this approximately 4.5 acre, clay-lined unit receives rainfall that has come in contact with the lignite storage pile (7). It has been active since January 3, 1985. The units dimensions have not been determined (6, Att. 6, pg. 3). The surface drainage would flow south from this unit to Brandy Branch cooling pond.

10. **Bottom Ash Basin No. 1**

Active since January 3, 1985 (6, Att. B-4), this unit is located northwest of the main plant area and east of SWMU #11 (Figure 1). The 29 acre, clay-lined unit receives bottom ash from the boilers (6, Att. 6, pg. 3). The unit also receives demineralizer regenerant wastewater (acid and caustic) and laboratory wastes (7 pg. 3) from SWMU #2. The wastewater is neutralized in-line, but occasionally discharged unneutralized into the

basin prior to disposal into the Scrubber Sludge Landfill. Surface drainage from this unit would flow southeast to Brandy Branch cooling pond (2).

11. Bottom Ash Basin No. 2

Active since January 3, 1985 (6, Att. B-4), this 26 acre, clay-lined unit is located northwest of the main plant area and west of SWMU #10. This basin is not used for the overflow from SWMU #10. The unit receives bottom ash from the boilers (6, Att. 6 pg. 3), and demineralizer regenerant wastewater (acid and caustic) and laboratory wastes (7 pg. 3) from SWMU #2. The demineralizer regenerant wastewater is neutralized in-line, but occasionally is discharged unneutralized into the basin prior to disposal into the Scrubber Sludge Landfill. The dimensions of this unit are not known. Should the basin overflow, the drainage would flow to the southeast toward Brandy Branch cooling pond (2).

12. Surge Pond

This unit which began production on January 3, 1985, is located south of the SWMU #10 and northwest of the main plant area. No other information regarding this unit is available.

4. PATHWAY CHARACTERISTICS

Air Pathway Characteristics

No information regarding the air pathway characteristics is available. The contaminants of concern are primarily heavy metals in the form of liquids and sludges. Migration into the air pathway is unlikely. There is no documented evidence that an observed release to the air pathway has occurred.

Ground Water Characteristics

The plant is located in the West Gulf Coastal Plain in Tertiary deposits of the Reklaw Formation. This Formation consists of clay, with silty muscovitic, carbonaceous interbeds of moderate reddish-brown clay. The Reklaw Formation is approximately 100 feet thick in Harrison County (12, pg. 8).

Beneath the Reklaw Formation is the Carrizo Sand and the Wilcox Group, which are also Tertiary deposits. These units are hydraulically interconnected and generally function as a single aquifer. The aquifer is referred to as the Cypress aquifer. Consisting principally of lenticular beds of sand, silt and clay, the Cypress aquifer is approximately 900 feet thick in southwestern Harrison County (12, pg. 2). In the site area, the Cypress aquifer is approximately 600 feet thick (12, pg. 14) and the altitude of the water is approximately 92 feet below the ground surface (12, pg. 16). The closest known drinking water well to the site has a total depth of 465 feet and a static water level (below land surface) of 95.8 feet (12, pg. 40, 51). It is used for both domestic and livestock purposes. There are ten monitoring wells, of undetermined depths, located on-site. Some have static water levels

ranging from 40 to 47 feet (6, Att. E-1). The Cypress aquifer forms the uppermost aquifer under the site and is used as an area drinking water source.

The source of water for the Cypress aquifer is from precipitation which percolates downward through the zone of aeration to the zone of saturation. The net precipitation for the plant area is negative 2 inches (1).

Ground water moves through the sand beds in the Cypress aquifer from areas of recharge to areas of discharge at the slow rate of approximately 200 feet per year. The general direction of movement as well as the hydraulic gradient of the water in the site area is southerly toward the Sabine River (12, pg. 13).

Surface Water Characteristics

The local topography is gently rolling to hilly and generally rises from east to west (12, pg. 5). The area generally drains into the Sabine River. The plant site has eight outfalls (NPDES Permit 02496) into the Brandy Branch cooling pond (known locally as Pirkey Lake), on the southeast side of the plant property (6, Att. 2, pg. 8). Pirkey Lake appears to be a portion of Brandy Branch that was dammed 3 miles north of the Sabine River but the topographic maps have not been updated to show Pirkey Lake. Brandy Branch was previously known as Rodgers Lake, and encompassed a larger area (14). The plant ground slopes to the southeast toward Pirkey Lake, which is used for fishing (15). Brandy Branch flows into the Sabine River (2).

The upgradient drainage area has not been identified. Located in a 100 year floodplain, the site receives a 2 year, 24 hour average rainfall of 4.5 inches (4). The potential for flooding is not known because the elevation difference between the site and the banks of the Brandy Branch cooling pond is not known (2).

On-Site Pathway Characteristics

The facility is active, with controlled access and a fence surrounding it. The number of on-site employees and the number of employees coming into direct contact with the waste process have not been determined. Data suggest that the waste treatment process is a closed system in which contents are pumped from one SWMU to another without being handled by employees. It has not been determined how the solvents and waste oils are drummed and removed.

5. TARGETS

Harrison County is supplied by both surface and ground water for municipal and private uses. Hallsville (population 1800) has 4 wells, located approximately 5 miles northwest of the plant. The wells range in depth from 280 to 318 feet, with static water levels of approximately 100 feet (14, 12 pg 40). Hallsville has an alternate water source with Longview, which receives water from the Sabine River. The area residents receive water from private wells; no rural water districts exist in the area (14). There are approximately 87 residents within a 1 mile radius and approximately 300 within a 3 mile radius (2).

The Sabine River is the closest drinking water supply to the site, but the intake is located upstream, north of FM 259 and west of 1845 on Harrison Road. The river supplies Longview from this intake. The nearest downstream intake is in Logansport, Louisiana. Brandy Branch cooling pond is not used for a drinking water supply (14). There are no data supporting an air target or an on-site target.

6. CONCLUSIONS

The function of the plant is to produce electricity. The waste process is generated through the boiling and subsequent cooling of water used in the generation of steam.

The SWMUs are the receptacles for the process water pathway. The twelve identified SWMUs include eight surface impoundments, the wastewater treatment system, the drum storage area and two landfills.

During a TWC inspection, the metal cleaning waste surface impoundment was found to have a pH of 1.53. The TWC recommended that the facility be closed. pH measurements taken on April 30, 1986, revealed a range of 3.5 to 7.53 from the impoundment sludge and liner. The bottom liner and the dike revealed a pH range of 3.28 to 6.44. The material used to clean the boiler (hydrochloric acid and ammonia difluoride) were deposited in the impoundment. Waste oils and solvents are present on-site and are drummed and stored for less than 90 days, until they are shipped off-site. Other constituents, such as the by-products of burned lignite, are considered to be non-hazardous due to their low concentrations.

The state has requested the installation of additional monitoring wells around the metal cleaning wastewater surface impoundment before allowing closure. The locations of the monitoring wells have been proposed, but it is not known if the wells have been installed.

The primary pathway of concern is ground water because the intakes for the surface water used from the Sabine River are upgradient of the site. The public water supply for the 3 mile radius is from private wells. The Cypress aquifer is the source of local ground water. The Reklaw Formation, Carrizo Sand and Wilcox Group are interconnected and comprise the Cypress aquifer. The Reklaw Formation outcrops on-site.

The static water levels are approximately 40 to 95.8 feet and the water bearing zone reaches a depth of 465 feet. The general direction of water movement is south toward the Sabine River. The water movement is slow at approximately 200 feet per year.

PA DOCUMENTATION LOG SHEET	SITE NAME: Southwestern Electric Power Co. CITY: Hallsville STATE: Texas IDENTIFICATION NUMBER: TXD000726380

Reference Number	Description of the Reference
1	U.S. EPA Uncontrolled Hazardous Waste Site Ranking System: A Users Manual. 47FR31219-31263. July 16, 1982, (Appendix A, CERCLA).
2	U.S.G.S. 15 minute series Topographic map. Tatum and Darco. 1958.
3	Sax, N. Irving. 1984. Dangerous Properties of Industrial Materials. Sixth Edition. Van Nostrand Reinhold Company.
4	Hershfield, David M. Rainfall Frequency Atlas of the United States. U.S. Department of Agriculture Soil Conservation Service. Technical Paper No. 40. 1961.
5	ROC. To: Dorinda Sullivan, Texas Parks and Wildlife Department. From: Don L. Hudnall, FIT Toxicologist, EPA Region VI. Re: Information on Endangered Species and Critical Habitats.
6	Schuessler, Edward. Planning Research Corporation. Southwest Electric Power Company Loss of Interim Status Inspection Report-Checklist. September 24, 1986.
7	Letter. To: Allan M. Seils, Head Technical Support Unit, Texas Water Commission. From: Brian Bond, Southwestern Electric Power Co. Re: Solid Waste Registration No. 33240 H. W. Pirkey Power Plant. December 17, 1987.
8	Memorandum. To: Sam Pole, Chief, Hazardous & Solid Waste Division, Texas Water Commission. From: William Gibson, District 5. Re: Sampling Inspection, SWEPCO - Pirkey Power Plant. November 20, 1987.
9	Dun and Bradstreet Int. Principal International Businesses. 1989.
10	Directory of Corporate Affiliations. National Register Publishing Company. 1989.
11	Gibson, William, Texas Water Commission Field Investigator. Solid Waste Compliance Monitoring Inspection Report. November 20, 1987.

PA DOCUMENTATION LOG SHEET	SITE NAME: Southwestern Electric Power Co. CITY: Hallsville STATE: Texas IDENTIFICATION NUMBER: TXD000726380

Reference Number	Description of the Reference
12	Broom, M. E. and Myers, B. N. United States Geological Survey. Texas Water Development Board Report No. 27. Ground-Water Resources of Harrison County, Texas. August, 1966.
13	Letter. To: Jay A. Pruett, Manager of Environmental Affairs, SWEPCO. From: Samuel B. Pole, Chief Hazardous and Solid Waste Division, Texas Water Commission. Re: SWR 33240 Closure Groundwater Monitoring Proposal. January 20, 1988.
14	ROC. To: Frank Craig, Water Superintendant, Hallsville, Tx. From: Pam Fetzer, FIT Geologist, EPA Region VI. Re: Water Supply for the Hallsville, TX area. May 10, 1989.
15	ROC. To: Gary Burton, Engineer - Corps of Engineers. From: Pam Fetzer, FIT Geologist, EPA Region VI. Re: Intake Locations on and uses for the Sabine River. April 28, 1989.

DOW 6/19/89

*****CONFIDENTIAL*****PRE-DECISIONAL DOCUMENT*****
PRESCORE ANALYSIS HRS SCORESHEET

Site Name:	Southwestern Electric Power Company
EPA ID No.:	TXD00072638036
TDD No.:	F-6-8904-63
City:	Hallsville
County:	Harrison
State:	Texas

Site Evaluator: Pam Fetzer
Region VI FIT Geologist

Date: May 26, 1989

POTENTIAL RELEASES

[X] Groundwater
[ ] Surface Water
[ ] Air
[ ] On-site/direct contact

SCORING SCENARIOS		Preliminary	Projected
GROUNDWATER ROUTE SCORE (S_{gw})	=	7.47	7.47
SURFACE WATER ROUTE SCORE (S_w)	=	4.44	4.44
AIR ROUTE SCORE (S_a)	=	0.00	0.00
TOTAL SCORE (S_M)	=	5.02	5.02

NEW HRS MODEL CONSIDERATIONS

GROUNDWATER ROUTE: Within a 3 mile radius, the population affected by ground water is approximately 800 people. A 4 mile radius would not increase the score to the value for 1,000 people.

SURFACE WATER ROUTE: The surface water intake is approximately 5 miles upstream from the plant, therefore no additional targets will be included in the new HRS model.

AIR ROUTE: No air data has been provided that extablishes a release to the air pathway. Due to the nature of the contaminants on-site, the possibility existed for hydrochloric acid fumes to be released into the air; however, the fumes would dissipate quickly.

ON-SITE ROUTE: No on-site routes have been established from the data. The plant employees could have had direct contact with the contaminant of concern. Should the employees be exposed the prescore would not change.

*****CONFIDENTIAL*****PRE-DECISIONAL DOCUMENT*****

****** GROUND WATER ROUTE WORKSHEET ******

		Preliminary	Reference	Projected	Reference
1	OBSERVED RELEASE	0		0	
2	ROUTE CHARACTERISTICS				
	DEPTH TO AQUIFER OF CONCERN (x2)	4	6, Att. E-1; 12, pg 16	4	6, Att. E-1; 12, pg 16
	NET PRECIPITATION	1	1	1	1
	PERMEABILITY OF UNSATURATED ZONE	1	1; 12, pg 8	1	1
	PHYSICAL STATE	3	6, Att. 7, pg 15	3	6, Att. 7, pg15
	ROUTE CHARACT. SCORE =	9		9	
3	CONTAINMENT	2	6, Att. 7, pg 5	2	6, Att. 7, pg 5
4	WASTE CHARACTERISTICS:				
	TOXICITY/PERSISTENCE	9	3; 6, Att 7, pg 15	9	3
	HAZARDOUS WASTE QUANTITY	8	6, Att. E-1	8	6, Att. E-1
	WASTE CHARACT. SCORE =	17		17	
5	TARGETS:				
	GROUNDWATER USE (x3)	6	14	6	14
	DISTANCE TO NEAREST WELL/POPULATION SERVED	8	12, pg 51, 14	8	12, pg 51, 14
	TOTAL TARGETS SCORE =	14		14	
	$\frac{(1x4x5) \text{ or } (2x3x4x5)}{57,330} \times 100$				
	GROUNDWATER ROUTE SCORE =	7.47		7.47	

*****CONFIDENTIAL*****PRE-DECISIONAL DOCUMENT*****

***** SURFACE WATER ROUTE WORKSHEET ****

		Preliminary	Reference	Projected	Reference
1	OBSERVED RELEASE	0		0	
2	ROUTE CHARACTERISTICS:				
	FACILITY SLOPE AND INTER VENING TERRAIN	2	2	2	2
	1-yr, 24-hr. RAINFALL	3	1	3	1
	DISTANCE TO NEAREST SURFACE WATER (x2)	6	2	6	2
	PHYSICAL STATE	3	6, Att 7, pg 15	3	6, Att 7, pg 15
	ROUTE CHARACT. SCORE	14		14	
3	CONTAINMENT	2	6, Att, 7, pg 5	2	6, Att, 7, pg 5
4	WASTE CHARACTERISTICS:				
	TOXICITY/PERSISTENCE	9	3; 6, Att, 7, pg 15	9	3; 6, Att, 7, pg 15
	HAZ. WASTE QUANTITY	8	6, Att, E-1	8	6, Att, E-1
	WASTE CHARACT. SCORE	17		17	
5	TARGETS:				
	SURFACE WATER USE(x3)	6	15	6	15
	DISTANCE TO A SENSITIVE ENVIRONMENT (x2)	0	5	0	5
	POPULATION SERVED/ DISTANCE TO DOWNSTREAM WATER INTAKE	0	14	0	14
	TOTAL TARGETS SCORE =	6		6	
	$\frac{(1x4x5) \text{ or } (2x3x4x5)}{64,350} \times 100$				
	SURFACE WATER ROUTE SCORE =	4.44		4.44	

*****CONFIDENTIAL*****PRE-DECISIONAL DOCUMENT*****

***** AIR ROUTE WORK SHEET ****

		Preliminary	Reference	Projected	Reference
1	OBSERVED RELEASE	0		0	
	DATE AND LOCATION:				
2	WASTE CHARACTERISTICS:				
	REACTIVITY AND INCOMPATIBILITY				
	TOXICITY (x3)				
	HAZARDOUS WASTE QUANTITY				
	WASTE CHARACT. SCORE =				
3	TARGETS:				
	POP. WITHIN 4 MILES				
	DISTANCE TO SENSITIVE ENVIRONMENT (x2)				
	LAND USE				
	TOTAL TARGETS SCORE =				
	$\frac{1x2x3}{35,100}$ x 100 =				
	AIR ROUTE SCORE =	0		0	

2

Preliminary S_m WORKSHEET

	S	S^2
GROUNDWATER ROUTE SCORE (S_{gw})	7.47	55.80
SURFACE WATER ROUTE SCORE (S_{sw})	4.44	19.71
AIR ROUTE SCORE (S_a)	0.00	0.00
$S_{gw}^2 + S_{sw}^2 + S_a^2$		75.51
$(S_{gw}^2 + S_{sw}^2 + S_a^2)^{\frac{1}{2}}$		8.69
$(S_{gw}^2 + S_{sw}^2 + S_a^2)^{\frac{1}{2}} / 1.73 = S_M$		5.02

2

Projected S_m WORKSHEET

	S	S^2
GROUNDWATER ROUTE SCORE (S_{gw})	7.47	55.80
SURFACE WATER ROUTE SCORE (S_{sw})	4.44	19.71
AIR ROUTE SCORE (S_a)	0.00	0.00
$S_{gw}^2 + S_{sw}^2 + S_a^2$		75.51
$(S_{gw}^2 + S_{sw}^2 + S_a^2)^{\frac{1}{2}}$		8.69
$(S_{gw}^2 + S_{sw}^2 + S_a^2)^{\frac{1}{2}} / 1.73 = S_M$		5.02

PA DOCUMENTATION LOG SHEET	SITE NAME: Southwestern Electric Power Co. CITY: Hallsville STATE: Texas IDENTIFICATION NUMBER: TXD000726380

Reference Number	Description of the Reference
1	U.S. EPA Uncontrolled Hazardous Waste Site Ranking System: A Users Manual. 47FR31219-31263. July 16, 1982, (Appendix A, CERCLA).
2	U.S.G.S. 15 minute series Topographic map. Tatum and Darco. 1958.
3	Sax, N. Irving. 1984. Dangerous Properties of Industrial Materials. Sixth Edition. Van Nostrand Reinhold Company.
4	Hershfield, David M. Rainfall Frequency Atlas of the United States. U.S. Department of Agriculture Soil Conservation Service. Technical Paper No. 40. 1961.
5	ROC. To: Dorinda Sullivan, Texas Parks and Wildlife Department. From: Don L. Hudnall, FIT Toxicologist, EPA Region VI. Re: Information on Endangered Species and Critical Habitats.
6	Schuessler, Edward. Planning Research Corporation. Southwest Electric Power Company Loss of Interim Status Inspection Report-Checklist. September 24, 1986.
7	Letter. To: Allan M. Seils, Head Technical Support Unit, Texas Water Commission. From: Brian Bond, Southwestern Electric Power Co. Re: Solid Waste Registration No. 33240 H. W. Pirkey Power Plant. December 17, 1987.
8	Memorandum. To: Sam Pole, Chief, Hazardous & Solid Waste Division, Texas Water Commission. From: William Gibson, District 5. Re: Sampling Inspection, SWEPCO - Pirkey Power Plant. November 20, 1987.
9	Dun and Bradstreet Int. Principal International Businesses. 1989.
10	Directory of Corporate Affiliations. National Register Publishing Company. 1989.
11	Gibson, William, Texas Water Commission Field Investigator. Solid Waste Compliance Monitoring Inspection Report. November 20, 1987.

PA DOCUMENTATION LOG SHEET	SITE NAME: Southwestern Electric Power Co. CITY: Hallsville STATE: Texas IDENTIFICATION NUMBER: TXD000726380
Reference Number	Description of the Reference
12	Broom, M. E. and Myers, B. N. United States Geological Survey. Texas Water Development Board Report No. 27. Ground-Water Resources of Harrison County, Texas. August, 1966.
13	Letter. To: Jay A. Pruett, Manager of Environmental Affairs, SWEPCO. From: Samuel B. Pole, Chief Hazardous and Solid Waste Division, Texas Water Commission. Re: SWR 33240 Closure Groundwater Monitoring Proposal. January 20, 1988.
14	ROC. To: Frank Craig, Water Superintendant, Hallsville, Tx. From: Pam Fetzer, FIT Geologist, EPA Region VI. Re: Water Supply for the Hallsville, TX area. May 10, 1989.
15	ROC. To: Gary Burton, Engineer - Corps of Engineers. From: Pam Fetzer, FIT Geologist, EPA Region VI. Re: Intake Locations on and uses for the Sabine River. April 28, 1989.

Pirkey - TWC Haz Waste

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202-2733

JUN 19 1990

Mr. Jay A. Pruett
Manager of Environmental Affairs
Southwestern Electric Power Company
P. O. Box 21106
Shreveport, Louisiana 71156

RE: Approval of Equivalency Demonstration; Closure by Removal, Metal Cleaning Waste Pond, H. W. Pirkey Power Plant, EPA I. D. No.: TXD000726380

Dear Mr. Pruett:

On April 2, 1990, the U. S. Environmental Protection Agency (EPA) issued a public notice of its proposal to approve Southwestern Electric Power Company's petition for a determination that closure of the Metal Cleaning Waste Pond at the Pirkey Plant meets requirements for closure by removal (clean closure) under 40 CFR Part 264. The 30-day comment period has now ended and no comments were received from the public. The Texas Water Commission recommended approval of the petition.

You are therefore advised that a determination has been made finding that closure of the Metal Cleaning Waste Pond meets federal requirements for clean closure under 40 CFR Part 264 and your petition is approved.

If you have questions or need further information regarding this determination, you may contact Van Cammack at (214) 655-6790.

Sincerely yours,

Allyn M. Davis

Allyn M. Davis, Director
Hazardous Waste Management Division

cc: Mr. Allen P. Beinke
Executive Director
Texas Water Commission

Pirkey - TWC Plan
Wat

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202-2733

March 23, 1990

Mr. Jay A. Pruett
Manager of Environmental Affairs
Southwestern Electric Power Company
P.O. Box 21106
Shreveport, LA 71156

Re: Equivalency Demonstration; closure by removal,
Metal Cleaning Waste Pond, H.W. Pirkey Power Plant
EPA I.D. No: TXD000726380

Dear Mr. Pruett:

We have completed our review of the material you submitted in support of your petition for a determination that closure of the metal cleaning waste pond meets the requirements for clean closure under 40 CFR Part 264. We plan to approve the petition if no problems are identified during the public comment period.

Enclosed is a copy of the public notice announcement to be published in the Longview Morning Journal on April 2, 1990. It provides for a 30-day comment period and an opportunity for the public to request a hearing. Any comments received during the comment period or hearing will be considered in reaching a final decision.

We appreciate the time and effort that has gone into this closure and approval process. If you have questions, you may contact Van Cammack of my staff at (214) 655-6780.

Sincerely yours,

WK Honker

William K. Honker, Chief
RCRA Permits Branch

Enclosure

Public Notice

U.S. Environmental Protection Agency
Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733

April 2, 1990

Notice of Determination that Closure By Removal under 40 CFR Part 265 Meets Requirements for 40 CFR Part 264; Metal Cleaning Waste Pond, Southwestern Electric Power Company, H. W. Pirkey Power Plant, EPA I.D. No: TXD000726380.

Under authority of the Resource Conservation and Recovery Act (RCRA), the U.S. Environmental Protection Agency (EPA) proposes to approve a petition by Southwestern Electric Power Company for a determination that closure of the Metal Cleaning Waste Pond at its H. W. Pirkey Power Plant meets the requirements for closure by removal (clean closure) under 40 CFR Part 264. The facility currently operates no other hazardous waste management units which require operating permits.

EPA invites the public to review the petition and related correspondence at the Longview Public Library, 222 West Cotton, Longview, Texas, or at the EPA library, 1445 Ross Avenue, Dallas, Texas.

The Pirkey Plant is a lignite fired steam-electric power plant located about six miles southeast of Hallsville, Texas. The plant discharged about 16,000 gallons of unneutralized metal cleaning acid-wash water into the Metal Cleaning Waste Pond during startup operations in late 1984. In accordance with an approved closure plan, the acid water was neutralized in the pond and further treated through the plant wastewater treatment system. Silts and sludges were removed from the pond. The facility has submitted data to support a demonstration that the unit has been cleaned up to levels corresponding to background levels and that ground water shows no hazardous constituent contamination caused by this unit.

Any person wishing to comment on the proposal to approve this petition or to request a public hearing should submit written comments and/or requests to:

U.S. Environmental Protection Agency
Hazardous Waste Management Division
RCRA Permits Branch (6H-PC)
1445 Ross Avenue
Dallas, Texas 75202-2733

Attn: Van Cammack

Request for a public hearing should state the nature of the issues proposed to be raised at the hearing. Comments and/or requests for hearing should be submitted on or before May 1, 1990, in order to be considered.

All written comments submitted on the petition will be considered in reaching the final decision.

Southwestern Electric Power Company
P. O. BOX 21106 - SHREVEPORT, LOUISIANA 71156

March 5, 1990

Mr. Van Cammack
Closure Section
Environmental Protection Agency, Region VI
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Dear Mr. Cammack:

RE: EPA I.D. NO. TXD000726380
H. W. PIRKEY POWER PLANT
METAL CLEANING WASTE PND CLOSURE

In response to our telephone conversation of March 1, 1990, requesting additional information regarding closure of our metal cleaning waste pond, I am providing you with the following information:

1. Request for our most recent closure plan. The closure plan submitted to TWC on May 14, 1985, and responded to by the TWC on June 25, 1985, is our most recent closure plan. The plan of May 14, 1985, was not updated to include the inadequacies which TWC addressed on June 25, 1985. The June 25, 1985, TWC response letter was incorporated as part of the above closure plan of May 14, 1985. Also, on October 30, 1987, this plan was amended to include specifications for liner construction. This document is included as Attachment No. 1.

2. Request for referenced letters in the letter by Jay Pruett sent to Sam Pole, of the TWC, on February 8, 1988, requesting Certification of Closure. The letters signed by R. Terral Whetstone, Attachment No. 2, and Gordon M. Naquin, P.E., Attachment No. 3, are herein transmitted.

3. Inquiry as to whether the three-foot clay liner has been installed in the above referenced pond. The clay liner has not been installed in this pond at this time. Information packets are being prepared to put out bids for the clay liner in this pond.

Should you have any questions concerning the information transmitted in this letter, please contact me at the address above, or by telephone at (318) 221-2604, extension 238.

Sincerely,

SWEPCO

Jim Prothro

Jim Prothro
Environmental Specialist

JP:lc

Enclosures

xc: Mr. J. A. Pruett
File

ATTACHMENT NO. 1

Southwestern Electric Power Company
P. O. BOX 21106 - SHREVEPORT, LOUISIANA 71156

October 30, 1987

Mr. David Buchanan
Hazardous and Solid Waste Division
Texas Water Commission
P. O. Box 13087, Capitol Station
Austin, TX 78711

Re: Metal Cleaning Pond
H. W. Pirkey Power Plant
SW#33240

Dear Mr. Buchanan:

Pursuant to an inspection of our H. W. Pirkey Power Plant on October 27-28, 1987 by representatives of the TWC District V staff, as well as our telephone conversations of yesterday, we are today submitting a specification for liner construction for the metal cleaning waste pond at the H. W. Pirkey Power Plant. Installation of this new liner will constitute closure of the "hazardous" waste status of the metal cleaning waste pond at this facility. Assessment of potential contamination of groundwater at this location will continue as a separate item.

The existing metal cleaning waste pond was constructed in clay materials meeting the TWC guidelines for in-situ clay liners. We are proposing to install three feet of recompacted clay from a nearby borrow area over the existing in-situ clay. We are submitting the enclosed specifications for liner construction for your review and approval. Immediately upon receipt of your approval we will begin construction of this liner in order to complete closure of the metal cleaning waste pond.

Once the new liner has been installed, this pond will be used infrequently if ever again. Its only intended use at this time would be for containment of air preheater washwater. The air preheater is a metal heat exchanger which transfers heat from the hot flue gas exiting the boiler to air being taken into the boiler for combustion. Once in a while it may be necessary to wash the air preheater with water to remove accumulations of fly ash or rust which may reduce the efficiency of the heat transfer process. This waste, which would be placed in the metal cleaning

waste pond for evaporation or treatment and discharge, would consist of water, iron oxides, and fly ash particles. It would have a pH of approximately 3.5 to 4.0 due to trace amounts of sulfur residue resulting from the combustion of the plant's lignite fuel. To our knowledge there would be no hazardous constituents in this wastestream.

It is our understanding from our telephone conversation yesterday that, if construction of the new metal cleaning waste pond liner is completed within three weeks (thereby completing closure of the pond), then RCRA interim status requirements would not be applicable to this facility and fines or other enforcement actions would be inappropriate and would not be instituted. It is our intention to complete the closure of this pond by installation of the new liner within the three week time period. It is further our understanding that the three weeks time period does not commence until we have received approval of the specifications from TWC and that delays due to weather or soil conditions are excluded from the three week time period. Finally, it is our understanding that you will review the enclosed specification and provide us with your comments or approval within a few days, if possible.

As we discussed yesterday, SWEPCO has retained the services of Espey, Huston & Associates (EH&A) as a groundwater consultant to evaluate the possibility of alteration of the pH of groundwater at the site due to the influence of the metal cleaning waste pond. EH&A has reviewed preliminary data and is preparing a recommendation for the installation of additional monitoring wells to obtain more detailed information regarding groundwater impacts from the metal cleaning waste pond. We will provide the EH&A proposal for the installation of additional groundwater monitoring wells to TWC for review and approval prior to installation of any new wells. We anticipate submitting this plan for additional monitoring wells to you within two weeks. Upon your approval of those plans, we will proceed with evaluation of the groundwater impacts.

Please be assured that we fully intend to expeditiously complete closure of the existing metal cleaning waste pond as well as assessment of and remediation of, if necessary, the groundwater at the site. Your assistance in review of the enclosed pond liner specification is appreciated. Please give me a call when you have completed your review. Sincerely,

Jay A. Pruett

Jay A. Pruett
Manager of Environmental Affairs

JAP/db
Enclosure
xc: Mr. L. E. Dillahunty, w/o
Mr. R. T. Whetstone, w
Mr. E. M. Williams, w
Mr. A. I. Melson, w
Mr. W. H. Holley, w
Mr. T. B. Bond, w
File, ~~w/o~~

(ATTACHMENT NO. 2 (

Southwestern Electric Power Company
P. O. BOX 21106 - SHREVEPORT, LOUISIANA 71156

R. TERRAL WHETSTONE
Vice President
Superintendent of Power

February 4, 1988

TO WHOM IT MAY CONCERN:

This is to certify that closure has been completed for the metal cleaning waste pond at our H. W. Pirkey Power Plant, Solid Waste Registration No. 33240. The closure was conducted in accordance with the closure plans submitted to the Texas Water Commission and agreements with that agency. All hazardous waste has been neutralized and removed. The pond and its liner material have been verified as free of hazardous constituents or residue.

Groundwater assessment of the impact of the hazardous waste in the metal cleaning waste pond is continuing as a separate matter.

SOUTHWESTERN ELECTRIC POWER COMPANY

R. T. Whetstone

R. Terral Whetstone

SWORN TO AND SUBSCRIBED before me this 4th day of February, 1988.

Inez W. Harwell

Notary Public

INEZ W. HARWELL, Notary Public
Caddo Parish, Louisiana
My Commision is for Life

ATTACHMENT NO. 3

SwL SOUTHWESTERN LABORATORIES

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services

7222 Greenwood Rd. • P. O. Box 37577, Shreveport, LA 71133-7577 • 318/636-3673

February 4, 1988

SWEPCO
Post Office Box 21106
Shreveport, Louisiana 71156

Attention: Mr. Jay Pruett

Reference: Certification of Closure
Pirkey Metal Waste Pond
TWC Letter Dated January 11, 1988
SwL File No. 871863

Gentlemen:

Sampling and testing in accordance with TWC guidelines and recommendations at the referenced facility varify conditions in the Metal Waste Pond as being natural and meets closure requirements under TWC Guideline.

STATE OF TEXAS
GORDON M. NAQUIN
37667
REGISTERED PROFESSIONAL ENGINEER

Sincerely,

SOUTHWESTERN LABORATORIES, INC.

Gordon M. Naquin, P.E.
Manager - CME Services

GMN:dkw

SPECIFICATION
for

LINER CONSTRUCTION

METAL CLEANING WASTE POND

HENRY W. PIRKEY POWER PLANT

PREPARATORY WORK:

1. All undesirable materials, such as sludges and silts, presently existing in the metal cleaning waste pond will be removed by means of front-end loader and dump trucks.

2. Present in-situ clay adjacent to pump structure (north, east, and west sides) will be removed by backhoe and dump trucks to a three-foot (3′) depth for a distance of twenty feet (20′) from base of structure, and slopes shaped at 5:1.

LINER CONSTRUCTION:

1. A clay liner will be constructed in place of the present in-situ clay adjacent to the pump structure that was removed in preceding Step 2. A clay liner will also be constructed over the present in-situ clay in balance of pond and terminate at a 5:1 slope on the north, east, and west sides of the pump structure after overlapping the constructed clay liner adjacent to the pump structure so as to maintain a minimum depth of three feet (3′) of

constructed clay liner.

2. Constructed clay liners shall have a minimum thickness of three feet (3') and a permeability of 1 X 10^{-7} cm/sec., or less. Soil materials used for construction shall have a plasticity index greater than 15, a liquid limit greater than 30, and percent passing a No. 200 sieve greater than 30.

3. The soil material shall be placed in layers not exceeding six to nine inches in thickness, and then compacted to at least 95 percent of the maximum density at or slightly above optimum water content, as determined by ASTM Standard Method D-698. Compaction shall be accomplished by means of sheepsfoot roller and vibratory hand tamps. A minimum two-inch scarification depth will be utilized prior to placement of the following lift.

4. Each completed lift shall be approved by owner's qualified inspector prior to the placing of material for the next lift.

SOIL-CEMENT SLOPE PROTECTION:

1. Soil-cement shall be placed on all sloping surfaces of the constructed clay liner.

2. Cement for the soil-cement shall conform to ASTM C-150, Type I or Type II, and shall be approximately twelve percent (12%) by weight of soil.

3. The soil to be processed with cement shall be such that a minimum of eighty percent (80%) by dry weight shall pass a No. 4 sieve with less than thirty percent (30%) passing the No. 200 United States Standard Sieve.

4. Water shall be added such that when mixing is completed, the percentage of moisture in the mixture on a basis of oven-dry weight shall be such that at time of compaction it will not be below or more than two (2) percentage points above standard optimum condition.

5. The soil-cement shall be placed in layers which, when compacted, will be approximately four inches (4") in thickness.

6. All soil-cement work will be performed under the direction of a qualified inspector.

QUALITY CONTROL:

The field QC program proposed for the liner construction includes:

1. Visual inspection of each lift by a qualified inspector for type of material, lift thickness, moisture conditions, and degree of compaction.

2. Moisture/density testing on each lift, to include a minimum of five tests per lift. The tests will be made in accordance with ASTM D-2922-81.

3. Atterberg Limits Determination (ASTM D-4318) shall be performed at a minimum frequency of one every 500 cubic yards of completed liner. The Atterberg Limits Determinations will also be performed on all permeability tests. Such tests will be made in accordance with ASTM D-4318-83.

4. Permeability tests will be performed on undisturbed drive-tube samples taken from the in-place compacted liner material for each lift. Such samples will be taken perpendicular to the lift face. The hole produced by this testing procedure will be adequately backfilled with clay. These tests will be performed using the falling head method with a hydraulic gradient of at least ten (10) but not greater than 100. Two permeability tests per lift will be performed.

5. The final liner thickness will be verified by before-and-after elevation surveys, conducted on a grid not exceeding twenty-five feet (25') each way. The initial grid will be referenced to the project coordinate system so that the same points can be re-established for the final survey.

SCHEDULE:

1. This project will be completed in twenty-one working days. This does not include any days when the soil conditions are too wet for productive work.

Pirkey - TWC Haz waste

Southwestern Electric Power Company
P. O. BOX 21106 - SHREVEPORT, LOUISIANA 71156

February 5, 1990

Mr. Bill Luthans, Chief
Closure Section, Region VI
U.S. Environmental Protection Agency
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

RE: EQUIVALENCY DEMONSTRATION;
CLOSURE BY REMOVAL
METAL CLEANING WASTE POND
H. W. PIRKEY POWER PLANT
(TXD00726380)

Dear Mr. Luthans:

In response to your letter of December 12, 1989, requesting additional information regarding closure of our metal cleaning waste pond, we can provide you with the following information:

1. Pertinent material referenced but not included in our submittal of October 24, 1989:

   a. Our letter to Mr. David Buchanan, TWC, dated October 10, 1986, made reference to resampling done on August 8, 1986. As stated in the October 10, 1986 letter, this resampling was performed on the pond liner for permeability determinations on August 8, 1986. Enclosed is a copy of a letter dated August 25, 1986 from Southwestern Laboratories to Southwestern Electric Power Company which includes the data from permeability resampling conducted on the pond liner.

   b. You requested copies of Attachments E, F and G to our letter of November 25, 1987, to Mr. Bob Lee, TWC. Enclosed is a copy of a letter report dated November 23, 1987, from Southwestern Laboratories to Southwestern Electric Power Company. This was Attachment E of the November 25, 1987, letter. Attachment F consisted of a set of preliminary geological cross-sections constructed from the geologic descriptions taken from the original core borings. These cross-sections were created manually, with the originals sent to TWC with the letter of November 25, 1987. Copies of the cross-sections were not retained in our files, therefore, it will be necessary to get copies of these cross-sections directly from the TWC. If you wish me to obtain these from the TWC for you and provide them to you, please advise. Attachment G to the November 25, 1987, letter was the analytical data for pH, chlorides, sulfates, and electrical conductivity for samples of the clay layer

adjacent to the pond. A copy of this data, entitled, "Pirkey Metal Cleaning Pond Soils," is enclosed, with the adjacent clay layer samples being designated as samples B-14, B-15, P-108 and P-143.

c. You requested clearer copies of the boring logs contained in Attachment D of the November 25, 1987, letter. Enclosed is our original documentation of these logs, which is itself a copy of the field originals completed by East Texas Testing Laboratory, Inc. These are the most legible documents we have showing this boring information. I believe you will be able to read the written descriptions on these documents.

d. You requested groundwater monitoring information for the period of August, 1986, through January, 1988, which was not included with the original submittal. Enclosed is a printout of groundwater monitoring results that covers the entire period from May, 1985, through December, 1989.

2. Verification of Monitoring System

You requested information demonstrating that the monitoring system and information obtained from it are valid and pertinent to the closure decision. You requested such items as well schematics, showing casing depths, elevations and completion intervals, and descriptions of completions and sampling methods.

Monitoring wells 5, 6, 7 and 10 were installed in 1983. Monitoring wells 11 and 12 were installed in 1986, and wells 13, 14, and 15 were installed in 1988. The data that is available regarding completion of wells 5, 6, 7, 10, 11 and 12 is enclosed under the heading, "Log of Boring." Completion information for wells 13, 14 and 15 is included in a March 23, 1988, report from Southwestern Laboratories, a copy of which is enclosed. Data regarding well development and water sampling is included as part of a report entitled, "Preliminary Groundwater Assessment of the Metal Cleaning Pond and Recommendations for Additional Work," dated November, 1987, prepared by S. P. Huston & Associates, Inc. (copy enclosed). A copy of a drawing entitled, "HP-56, Wastewater Ponds, Lining Verification and Monitoring Wells," is enclosed. This drawing shows the location of the monitoring wells under consideration.

3. Justification of Appendix VIII Constituents of Monitor Well 7:

With regard to the high levels of Appendix VIII constituents shown by samples from monitoring well 7, we do not believe that this is the result of any impact from the metal cleaning waste pond. We initially experienced this same concern. We, therefore, secured the services of Espey, Huston & Associates, Inc., Engineering and Environmental Consultants (EH&A). The preliminary assessment of this consultant, referenced above, is enclosed. Following further investigation, EH&A issued a report entitled, "Groundwater Quality Assessment, Southwestern Electric Power Company, H. W. Pirkey Power Plant, South Hallsville, Texas," dated April, 1988. Among the conclusions of that

report was the following: "The results of this preliminary assessment suggest that a leakage has not occurred from the MCP. Information obtained during this study suggests groundwater degredation in the vicinity of MW-7 due to the surge pond." Figure 2-1 of the second EH&A report shows the location of MW-7 in relation to the surge pond and the metal cleaning waste pond. Monitoring Well MW-7 is immediately adjacent to the surge pond and some distance away from the metal cleaning waste pond. EH&A determined that it would take approximately 80 years for groundwater flow to travel from the metal cleaning waste pond to Monitoring Well MW-7, based on permeability of the water-bearing strata, gradients, etc.

In addition, as discussed on Page 5-1 of the EH&A Report, an analysis of the constituents of the surge pond indicates high levels of those same constituents which were found to be elevated in Monitoring Well MW-7. We believe this further indicates that this well was being impacted by the surge pond, rather than the metal cleaning waste pond. This information was transmitted to the Texas Water Commission in a letter of July 12, 1988, a copy of which is enclosed. As the July 12, 1988 letter states, the problem with the surge pond liner was corrected and, since that time, we have seen the quality of the water in MW-7 improving.

We believe that it is certain that the water quality reflected in Monitoring Well MW-7 is the result of the effects of the surge pond, and not the metal cleaning waste pond. Therefore, we believe the groundwater contamination indicated by Well 7 to be definitely dissociated from the metal cleaning waste pond.

We believe that the enclosed information addresses each of the concerns in your letter of December 12, 1989. It is our hope that this information will be sufficient to allow you to certify and approve a clean-closure for the Pirkey Power Plant metal cleaning waste pond. If you require any additional information, or if it would be helpful for me to meet with you to discuss any of this data, I will be happy to accommodate your needs. We are most anxious to proceed with the approval from your agency for closure of this pond.

Your assistance to-date has been very much appreciated.

Sincerely,

Jay A. Pruett

Jay A. Pruett

JAP:lc

Enclosures

xc: Messrs. Charles Mauk, TWC, w/o
R. T. Burns, w/o
A. I. Melson, w/o

EAST T[illegible]AS TESTING LABORATORY [illegible]C.

JOB NO. SH-5555-00 BORING NO. 15 DATE: 1/30/78

TYPE BORING: INT. SAMPLE SURFACE ELEV. 373.38 LOCATION: See Plan of Borings

SILTS & SANDS — CONDITION	COHESIVE SOILS — CLAYS: CONSISTENCY	PENETROMETER	N-VALUE
LO... Loose <10	VSo.. Very Soft	0 — 0.5	<2
MDe.. Med. Dense 10-30	So.. Soft	0.5 — 1.0	2 — 4
De... Dense 30-50	Fm.. Firm	1.0 — 1.5	4 — 8
VDe.. Very Dense > 50	St.. Stiff	1.5 — 3.0	8 — 15
	VSt.. Very Stiff	3.0 — 4.5	15 — 30
	H... Hard	4.5+	> 30

COLORS		MATERIALS	SAND ADJ.	CHARACTERTICS
Lt.. Light	Br.. Brown	Cl.. Clay, Clayey	F.. Fine	Calc. Calcareous
Dk.. Dark	Bk.. Black	Si.. Silt, Silty	M.. Medium	Lig. Lignite
G.. Gray	Bl.. Blue	Sa.. Sand, Sandy	Co.. Coarse	Org. Organic
T.. Tan	Gr.. Green	Ls.. Limestone	Si.. Silty	Lam. Laminated
R.. Red	Y.. Yellow	Gv.. Gravel		Sls. Slickensided
RdishReddish	Wh.. White	SiS.. Siltstone		Sl.. Slightly
		SS.. Sandstone		Sm(s). Seam(s)
		Sh.. Shale, Shaley		Nod. Nodules

TEST ASSIGNMENT	SAMPLE NO.	DEPTH, FT.	SAMPLES	STRATUM DESCRIPTION: CONDITION OR CONSISTENCY	COLOR	MINOR MATERIALS OR ADJECTIVES	PREDOMINATE MATERIAL	CHARACTERISTICS OR MODIFICATIONS	STANDARD PENETROMETER: SEAT—6"	1st—6"	2nd—6"	CLASSIFICATION, COMMENTS, OR REMARKS	HAND PENETROMETER
	J-1A		X	(15") LO	4.0 / Brown	Si f	Sa	w/ trace gravel	1	1	4		
	J-1B			St				& plant remains					
	T-2			(14")	R & T 2.0	Sa	cl						4.5+
				Hard	LtG&T	Si	cl	w/ trace fine gravel					
	J-3	5	X	(16½")				& gravel and	8	8	10		4.25
				6.0				seams of red si f Sa					
				VSt	Green Gray & Tan	Sa	cl	w/ inclusions of					
								lt brown si cl					
	J-4		X	(14")					8	8	13		3.25
	T-5	10		9.5									
				(29") St	L-Brown	Si	cl						3.5
				12.0 & T									
				MDe	LtG&T	cl	Sa	laminated w/					
	J-6		X	(18")				brown si cl	8	13	16	Drilling mud used from 15'	2.75
		15		16.0									
				Hard	Brown Mottled	Si	cl	w/ tan stained					
								seams of iron ore					
	J-7		X	(68")				gravel	8	14	18		3.25
		20											
	T-8			(18")		VSt	cl	19.5'					4.25
	J-9		X						8	14	21		4.25
		25		26.0									
				De	G&T	cl	Si	w/ trace iron					
								ore gravel					
	J-10		X	(18")					15	21	27		
		30											

WATER INFORMATION

Seepage at _____ feet
Boiled to _____ feet at _____
Water at _____ feet at _____
Water at _____ feet at _____

SITE CONDITIONS

Driller: _____
Logger: _____

GEOTECHNICAL ENGINEERS

EAST TEXAS TESTING LABORATORY INC.

JOB NO. SH-5555-OD BORING NO. 15 continued DATE: 1/30/78

TYPE BORING: SURFACE ELEV. LOCATION:

SILTS & SANDS — CONDITION	COHESIVE SOILS — CLAYS: CONSISTENCY	PENETROMETER	N-VALUE
LO. . Loose <10	VSo. . Very Soft	0 – 0.5	<2
MDe. . Med. Dense 10–30	So. . Soft	0.5 – 1.0	2 – 4
De. . . Dense 30–50	Fm. . Firm	1.0 – 1.5	4 – 8
VDe. . Very Dense > 50	St. . Stiff	1.5 – 3.0	8 – 15
	VSt. . Very Stiff	3.0 – 4.5	15 – 30
	H. . . Hard	4.5 +	> 30

COLORS	MATERIALS	SAND ADJ.	CHARACTERTICS
Lt. . Light Br. . Brown	Cl. . Clay, Clayey	F. . Fine	Calc. Calcareous
Dk. . Dark Bk. . Black	Si. . Silt, Silty	M. . Medium	Lig. Lignite
G. . . Gray Bl. . Blue	Sa. . Sand, Sandy	Co. . Coarse	Org. Organic
T. . . Tan Gr. . Green	Ls. . Limestone	Si. . Silty	Lam. Laminated
R. . . Red Y. . Yellow	Gv. . Gravel		Sls. Slickensided
RdishReddish Wh. . White	SIS. . Siltstone		Sl. . Slightly
	SS. . Sandstone		Sm(s). Seam(s)
	Sh. . Shale, Shaley		Nod. Nodules

TEST ASSIGNMENT	SAMPLE NO.	DEPTH, FT.	SAMPLES	STRATUM DESCRIPTION: CONDITION OR CONSISTENCY	COLOR	MINOR MATERIALS OR ADJECTIVES	PREDOMINATE MATERIAL	CHARACTERISTICS OR MODIFICATIONS	STANDARD PENETROMETER: SEAT–6"	1st.–6"	2nd.–6"	CLASSIFICATION, COMMENTS, OR REMARKS	HAND PENETROMETER
					61.0								
				Hard	DK Brown	Si	cl	with inclusions					
								lt gray fsa					
	J-18		X	(12")				red & green si	38	50			4.5+
		65						fsa lam					
								w/thin laminae					
								of lt gray si fsa					
								and trace of					
	J-19		X	(8")				organic matter	42	50			4.5
	J-20			(8")									4.5+
		70											
	J-21		X	(11½)					40	50/5"			4.25
					75.0'								
		75		VDe	Green & gray	Si f sa		interbedded w/					
								brown cl si					
	J-22		X	(5")					50/5"	75			2.0
		80											
	J-23		X	(4½)					50/5				
		85											
					88.0								
	J-24		X	(2")	VDe	Green & gray	Si f sa	w/ trace of	75/3"	25			
		90						brown cl si					

WATER INFORMATION

Seepage at _____ feet

Bailed to _____ feet at _____

Water at _____ feet at _____

Water at _____ feet at _____

SITE CONDITIONS

Driller: _____

Logger: _____

EAST TEXAS TESTING LABORATORY INC.

JOB NO. *SH-5555-00* BORING NO. *15 continued* DATE: *11/30/78*

TYPE BORING: SURFACE ELEV. LOCATION:

SILTS & SANDS — CONDITION	COHESIVE SOILS — CLAYS — CONSISTENCY	PENETROMETER	N-VALUE	COLORS	MATERIALS	SAND ADJ.	CHARACTERTICS
LO.. Loose <10	VSo.. Very Soft	0 – 0.5	<2	Lt.. Light, Br.. Brown	Cl.. Clay, Clayey	F.. Fine	Calc. Calcareous
MDe.. Med. Dense 10–30	So.. Soft	0.5 – 1.0	2 – 4	Dk.. Dark, Bk.. Black	Si.. Silt, Silty	M.. Medium	Lig. Lignite
De.. Dense 30–50	Fm.. Firm	1.0 – 1.5	4 – 8	G.. Gray, Bl.. Blue	Sa.. Sand, Sandy	Co.. Coarse	Org. Organic
VDe.. Very Dense >50	St.. Stiff	1.5 – 3.0	8 – 15	T.. Tan, Gr.. Green	Ls.. Limestone	Si.. Silty	Lam. Laminated
	VSt.. Very Stiff	3.0 – 4.5	15 – 30	R.. Red, Y.. Yellow	Gv.. Gravel		Sis. Slickensided
	H.. Hard	4.5 +	>30	RdishReddish, Wh.. White	SiS.. Siltstone		Sl.. Slightly
					SS.. Sandstone		Sm(s). Seam(s)
					Sh.. Shale, Shaley		Nod. Nodules

STRATUM DESCRIPTION

TEST ASSIGNMENT	SAMPLE NO.	DEPTH, FT.	SAMPLES	CONDITION OR CONSISTENCY	COLOR	MINOR MATERIALS OR ADJECTIVES	PREDOMINATE MATERIAL	CHARACTERISTICS OR MODIFICATIONS	STANDARD PENETROMETER SEAT – 6"	1st – 6"	2nd – 6"	CLASSIFICATION, COMMENTS, OR REMARKS	HAND PENETROMETER
					31.0								
	J-11		X	VDe	Green	glauconite	f Sa	w/dark brown	28	37	30		
				(17")				silt and					
		35			36.0			dark gray si f sa					
				VDe	Lt G	f	Sa	w/ red hematite					
								stains and few					
	J-12		X	(4.5")				limonite stains	50/5	75	25/2		
		40											
					42.0								
					Dk Br	Si	Cl	w/ green glauconitic					
	J-13		X	(18")				si f sa and dark	9	13	20		2.25
								gray si f sa					
		45		(24")									
	J-14							intermixed					2.25
						[illegible] rock seams @ 47'							
	J-15		X	(72")					17	27	42		2.5
		50											
					52.0								
				VDe	Green	glauconitic	si f sa	w/ inclusions					
	J-16		X	(16")				of brown cl	20	36	50/4.5	glauconite	2.0
								si and traces				supdominate	
		55						of lignite				in J-16	
	J-17		X	(5")					30	50/5			
		60											

WATER INFORMATION

Seepage at ______ feet

Bailed to ______ feet at ______

Water at ______ feet at ______

Water at ______ feet at ______

SITE CONDITIONS

Driller: ______

Logger: ______

GEOTECHNICAL ENGINEERS

EAST TEXAS TESTING LABORATORY, INC.

JOB NO. SH-5555-00 BORING NO. 15 continued DATE: 2/1/78

TYPE BORING: _____ SURFACE ELEV. _____ LOCATION: _____

SILTS & SANDS		COHESIVE SOILS – CLAYS			COLORS		MATERIALS	SAND ADJ.	CHARACTERTICS
CONDITION		CONSISTENCY	PENETROMETER	N-VALUE					
LD.. Loose	<10	VSo.. Very Soft	0 – 0.5	<2	Lt.. Light	Br.. Brown	Cl.. Clay, Clayey	F.. Fine	Calc. Calcareous
MDe.. Med. Dense	10-30	So.. Soft	0.5 – 1.0	2 – 4	Dk.. Dark	Bk.. Black	Si.. Silt, Silty	M.. Medium	Lig. Lignite
De.. Dense	30-50	Fm.. Firm	1.0 – 1.5	4 – 8	Gr.. Gray	Bl.. Blue	Sa.. Sand, Sandy	Co.. Coarse	Org. Organic
VDe.. Very Dense	>50	St.. Stiff	1.5 – 3.0	8 – 15	Tn.. Tan	Gr.. Green	Ls.. Limestone	Si.. Silty	Lam. Laminated
		VSt.. Very Stiff	3.0 – 4.5	15 – 30	R.. Red	Y.. Yellow	Gv.. Gravel		Sls. Slickensided
		H.. Hard	4.5 +	> 30	RdishReddish	Wh.. White	SiS.. Siltstone		Sl.. Slightly
							SS.. Sandstone		Sm(s). Seam(s)
							Sh.. Shale, Shaley		Nod. Nodules

TEST ASSIGNMENT	SAMPLE NO.	DEPTH, FT.	SAMPLES	STRATUM DESCRIPTION: CONDITION OR CONSISTENCY	COLOR	MINOR MATERIALS OR ADJECTIVES	PREDOMINATE MATERIAL	CHARACTERISTICS OR MODIFICATIONS	STANDARD PENETROMETOR: SEAT – 6"	1st. – 6"	2nd. – 6"	CLASSIFICATION, COMMENTS, OR REMARKS	HAND PENETROMETER
	J-25		X	(1")				trace of sandstone @ 93.0'		5/2"			
		95			95.0'								
					L+G	f	Sa						
	J-26		X	(2")	98.5'					75/2"			
		100											

WATER INFORMATION

Seepage at _____ feet
Bailed to _____ feet at _____
Water at _____ feet at _____
Water at _____ feet at _____

SITE CONDITIONS

_____
_____
_____
_____

Driller: _____
Logger: _____

GEOTECHNICAL ENGINEERS

EAST TEXAS TESTING LABORATORY, INC.

JOB NO. 54-5555-00 BORING NO. 14 DATE: 1/23/78

TYPE BORING: Int. Sample SURFACE ELEV. 357.27 LOCATION: See Plan of Bor. #s

SILTS & SANDS — CONDITION	COHESIVE SOILS — CLAYS			COLORS	MATERIALS	SAND ADJ.	CHARACTERTICS
	CONSISTENCY	PENETROMETER	N-VALUE				
LO..Loose <10	VSo..Very Soft	0-0.5	<2	Lt..Light Br..Brown	Cl..Clay, Cloyey	F..Fine	Calc.Calcareous
MDe..Med. Dense 10-30	So...Soft	0.5-1.0	2-4	Dk..Dark Bk..Black	Si..Silt, Silty	M..Medium	Lig.Lignite
De...Dense 30-50	Fm...Firm	1.0-1.5	4-8	G...Gray Bl..Blue	Sa..Sand, Sandy	Co..Coarse	Org.Organic
VDe..Very Dense >50	St...Stiff	1.5-3.0	8-15	T...Tan Gr..Green	Ls..Limestone		Lam.Laminated
	VSt..Very Stiff	3.0-4.5	15-30	R...Red Y..Yellow	Gy..Gravel	Si..Silty	Slk.Slickensided
	H...Hard	4.5+	>30	RdishReddish Wh..White	SiS..Siltstone		Sl..Slightly
					SS..Sandstone		Sm(s).Seam(s)
					Sh..Shale, Shaley		Nod.Nodules

TEST ASSIGNMENT	SAMPLE NO.	DEPTH, FT.	SAMPLES	STRATUM DESCRIPTION: CONDITION OR CONSISTENCY	COLOR	MINOR MATERIALS OR ADJECTIVES	PREDOMINATE MATERIAL	CHARACTERISTICS OR MODIFICATIONS	STANDARD PENETROMETER: SEAT-6"	1st-6"	2nd-6"	CLASSIFICATION, COMMENTS, OR REMARKS	HAND PENETROMETER
	J-1A			(14") LO	1.0 Brown	Si f	Sa	w/ wood & plant remains	2	2	2		
	J-1B			LO	2.0 Tan	Cl	Sa	w/ plant remains					
	J-2			VSt (14")	R.T. Lt G.	Sa	Cl		6	12	13		4.5+
		5						sandstone from 5-6'					
					8.0								
	J-3			(6") VSt	Lt G, Rit	Si	Cl	w/ traces	7	8	14		4.5
					9.5			iron ore gravel					
	J-4	10		(16") VSt	Lt Brownish Gray	Si	Cl	w/ Secondary iron ore gravel, red hematite stains and tan limonite stains					4.5
	J-5			(18")					7	10	17		3.5
		15											
					16.5								
				MDe	Lt G; T	slightly	Cl	Si f Sa					
	J-6			(15")					8	9	11		3.5
		20											
					22.0								
				VSt	Dk Brown	Si	Cl	intermixed w/					3.5
	J-7A			(18")	24.0			lt gray f Sa	5	13	49		
	J-7B							near contact w/ stratum below					
		25		VDe	R.T.	Si f	Sa	w/ traces lt gray f Sa and iron ore gravel					
					26.5								
	J-8							@ contact w/ stratum above	25	37	50/4	75	
				(14")									
		30		VDe	Green glauconitic	f Sa		w/ dark brown si cl and dark gray si f Sa					

WATER INFORMATION

Seepage at 8 feet
Bailed to ____ feet at ____
Water at 8 feet at 48 hrs
Water at ____ feet at ____
C.F.W.G. = 5.5' after 48 hrs

SITE CONDITIONS

Driller: ____
Logger: ____

EAST TEXAS TESTING LABORATORY, INC.

JOB NO. SH-5555-00 BORING NO. 14 contid 1 DATE: 11/28/78

TYPE BORING: SURFACE ELEV. LOCATION:

SILTS & SANDS	COHESIVE SOILS – CLAYS			COLORS	MATERIALS	SAND ADJ.	CHARACTERTICS
CONDITION	CONSISTENCY	PENETROMETER	N-VALUE	Lt..Light Br..Brown	Cl..Clay, Clayey	F..Fine	Calc.Calcareous
LO...Loose <10	VSo..Very Soft	0 – 0.5	<2	Dk..Dark Bk..Black	Si..Silt, Silty	M..Medium	Lig.Lignite
MDe..Med. Dense 10-30	So...Soft	0.5 – 1.0	2 – 4	G...Gray Bl..Blue	Sa..Sand, Sandy		Org.Organic
De....Dense 30-50	Fm...Firm	1.0 – 1.5	4 – 8	T...Tan Gr..Green	Ls..Limestone	Co..Coarse	Lam.Laminated
VDe..Very Dense > 50	St...Stiff	1.5 – 3.0	8 – 15	R...Red Y..Yellow	Gv..Gravel		Slk.Slickensided
	VSt..Very Stiff	3.0 – 4.5	15 – 30	ReishReddish Wh..White	SiS..Siltstone	Si..Silty	Sl..Slightly
	H...Hard	4.5 +	> 30		SS..Sandstone		Sm(s).Seam(s)
					Sh..Shale, Shaley		Nod.Nodules

TEST ASSIGNMENT	SAMPLE NO.	DEPTH, FT.	SAMPLES	STRATUM DESCRIPTION: CONDITION OR CONSISTENCY	COLOR	MINOR MATERIALS OR ADJECTIVES	PREDOMINATE MATERIAL	CHARACTERISTICS OR MODIFICATIONS	STANDARD PENETROMETOR: SEAT – 0"	1st. – 0"	2nd. – 6"	CLASSIFICATION, COMMENTS, OR REMARKS	HAND PENETROMETER
				32.0									
				Hard	DK Brown Sl Cl. W/ green glauconitic								
	J-9		X	(19")				Sl f Sa inter mixed	17	23	47		
		35											
	J-10		X	(18")		–		1" seam of gravel	26	25	37		
		40						C 33.5'					
	J-11		X	(18")					16	22	32		
	J-12	45	X	(6")									45
	J-13		X	(10")	49.0				22	50			
		50											

WATER INFORMATION

Seepage at _____ feet
Bailed to _____ feet at _____
Water at _____ feet at _____
Water at _____ feet at _____

SITE CONDITIONS

Driller: _____
Logger: _____

File

Southwestern Electric Power Company
P. O. BOX 21106 · SHREVEPORT, LOUISIANA 71156

July 12, 1988

Ms. Alice Rogers, Head
Solid Waste Enforcement Unit
Texas Water Commission
1700 North Congress Avenue
P. O. Box 13087, Capitol Station
Austin, Texas 78711-3087

Dear Ms. Rogers:

RE: SOUTHWESTERN ELECTRIC POWER COMPANY
HENRY W. PIRKEY POWER PLANT, GROUNDWATER ASSESSMENT
SCHEDULE OF CORRECTIVE ACTION

This letter is written to update the Texas Water Commission on the most recent developments associated with the Ground-Water Quality Assessment that has been performed at Southwestern Electric Power Company's Henry W. Pirkey Power Plant by Espey, Huston & Associates, Inc. (EH&A). This groundwater investigation was initiated by our Company at TWC's request after elevated groundwater constituents were observed at Monitor Well MW-7 during the period of time in which an un-neutralized boiler cleaning solution containing hydrochloric acid was inadvertently placed in the metal cleaning pond located at this facility.

Since the boiler cleaning wastes placed in the metal cleaning pond exhibited corrosive characteristics, this wastewater pond required closure as a Texas Water Commission Hazardous Waste Unit. A closure plan was developed for the metal cleaning pond which, in brief, consisted of dewatering the unit and performing extensive sampling and analysis of sludge, liner, and area soils to demonstrate clean closure of this facility. In February, 1988, with the approval of your agency, SWEPCO proceeded with a two-year Ground-Water Quality Assessment to determine if groundwater conditions observed at MW-7 were associated with the metal cleaning pond.

As was discussed in your telephone conversation of June 28,1988, with our Mr. Brian Bond, the EH & A Ground-Water Quality Assessment indicates that the suspected groundwater contamination detected at MW-7 has resulted from migration of surge pond process waters and not from the migration of metal cleaning pond wastewater constituents, which had previously been suspected as the source of the contamination observed at MW-7.

A copy of the EH&A Ground-Water Assessment has been enclosed for your review.

The surge pond and auxiliary surge pond receive process waters used in the flue gas desulfurization process operated at the Henry W. Pirkey Power Plant,

SWEPCO's base load operating unit. These waters are recirculated in the process to maintain various water levels within the scrubber system that are critical to plant operations.

The following outline summarizes the findings of SWEPCO's investigation, which indicates that the contamination observed at MW-7 has occurred as the result of migration of surge pond chemical constituents into the underlying groundwater, and also summarizes the corrective actions that have been taken to prevent future migration of surge pond constituents. The corrective actions have been taken with the unit in service and are substantially complete.

INVESTIGATION

1. Flue gas desulfurization sludges were removed from the surge pond and auxiliary surge pond and placed in the registered landfill located at Henry W. Pirkey Power Plant.

2. Inspection of the existing insitu surge pond and auxiliary surge pond liners revealed that the northwest section of the liner of the surge pond contained sand lenses and one area in particular appears to have been used as a stock pond prior to plant construction. This area seems to have provided the mechanism for the surge pond chemical constituents to migrate into the sediments tapped by MW-7 within the short period of time the impoundment has been in use.

3. This investigation has revealed that a portion of the insitu material that was used in the original surge pond construction and thought to be a suitable clay material for this was, in fact, not suitable liner material.

4. Based on the findings of our investigation, a decision has been made to completely reline the surge pond and auxiliary surge pond, using quality clay material which will be compacted and tested in six to eight-inch lifts to a total thickness of three feet. The details of our plan are discussed below.

CORRECTIVE ACTIONS (COMPLETED AND PROPOSED)

1. May 30, 1988: Flue gas desulfurization sludges were removed from the auxiliary surge pond and placed in the registered landfill located at this facility.

2. June 10, 1988: Relining of the auxiliary surge pond was completed and the auxiliary surge pond was placed back into service. Southwestern Laboratories was contracted to supervise the installation of this liner and provide stringent quality control checks (liner tests) during all phases of this relining. (See attached report.)

3. June 13, 1988: Flue gas desulfurization sludges were removed from the surge pond and placed in the registered landfill located at this facility.

4. June 27, 1988: SWEPCO began relining the surge pond under the supervision of Southwestern Laboratories Field Technicians. Quality control testing will be performed during all phases of this project.

5. The surge pond will be placed back into service.

We believe that the proposed measures will be sufficient to prevent the future migration of surge pond constituents into underlying groundwater, and that the continued quarterly groundwater sampling and analysis of MW-7 will indicate a significant decrease in chemical constituents that have been elevated at MW-7.

Please contact me at the above address or by telephone at 318/221-2604, Ext. 216, should you have any questions or require additional details concerning this corrective action.

Sincerely,

Jay A. Pruett BB.

Jay A. Pruett
Manager of Environmental Affairs

BB/JAP:lc
cc: Messrs. R. T. Whetstone
E. M. Williams
A. I. Melson
T. B. Bond
J. W. Witherspoon, TWC District V Office

832964

LOG OF BORING

PROJECT: Waste Water Ponds
CLIENT: SWEPCO

BORING NO.: MW-5
LOCATION: Hallsville

Date: 9-27-83 Type: Auger Ground Elevation: 362.5

N 2+61.5
W 7+82.2

Legend: ■ Sample X Penetration ▼ Water

Depth, Feet	Symbol	Sample	Description of Stratum
5			Very stiff brown and grey clay w/iron ore
10			Very stiff grey clay
15			Very stiff brown clay w/silty sand lenses
20			Firm brown and grey clayey silty sand
25			Firm grey clayey silty sand
30			Very dense grey silty sand w/clay pockets 11-33=7" 50 B/7"
35			Very dense grey clayey silty sand 16-34=11" 50 B/11"
40			Very dense grey clayey silty sand 26-24=9" 50 B/9"
45			Very dense grey clayey silty sand 11-39=11½" 50 B/11½"
50			Bottom of boring at 45½'.

832964

LOG OF BORING

PROJECT: Waste Water Ponds
CLIENT: SWEPCO

BORING NO.: MW-6
LOCATION: Hallsville

Date: 10-3-83 Type: Auger Ground Elevation: 361.0

S 1+84.6
W 10+60.5

Legend: ■ Sample X Penetration ▼ Water

Depth, Feet	Symbol	Sample	Description of Stratum
5			Stiff tan and grey clay w/silt lenses and iron ore
10			Very stiff tan and grey clay w/silt lenses and iron ore
15			Firm tan and grey clayey silty sand
20			Loose brown and grey clayey silty sand
25			Very dense grey clayey silty sand 25-25=11½" 50 B/11½"
30			Firm grey clayey silty sand 7-7-17 24 B/F
35			Very dense grey clayey silty sand 25-25=9" 50 B/9"
40			Very dense grey clayey silty sand 18-32=10½" 50 B/10½"
45			Bottom of boring at 40 feet.
50			

832964

LOG OF BORING

PROJECT: Waste Water Ponds
CLIENT: SWEPCO

BORING NO.: MW-7
LOCATION: Hallsville

Date: 10-3-83 Type: Auger Ground Elevation: 358.3

S 2+23.9
W 17+24.45

Legend: ▩ Sample X Penetration ▼ Water

Depth, Feet	Symbol	Sample	Description of Stratum
5			Stiff red, tan and grey sandy silty clay w/iron ore
10			Stiff tan and grey clay w/iron ore
15			Stiff tan and grey silty sandy clay lenses w/iron ore
20			Stiff tan and grey very sandy silty clay
25			Firm tan and grey clayey silty sand
30			Very dense grey silty sand 23-27=12" 50 B/F
35			Very dense grey clayey silty sand 17-35=12" 50 B/F
40			Very dense grey clayey silty sand 25-25=10½" 50 B/10½"
			Bottom of boring at 40 feet.
45			
50			

832964

LOG OF BORING

PROJECT: Waste Water Ponds
CLIENT: SWEPCO

BORING NO.: MW-10
LOCATION: Hallsville

Date: 10-10-83 Type: Auger Ground Elevation: 358.6

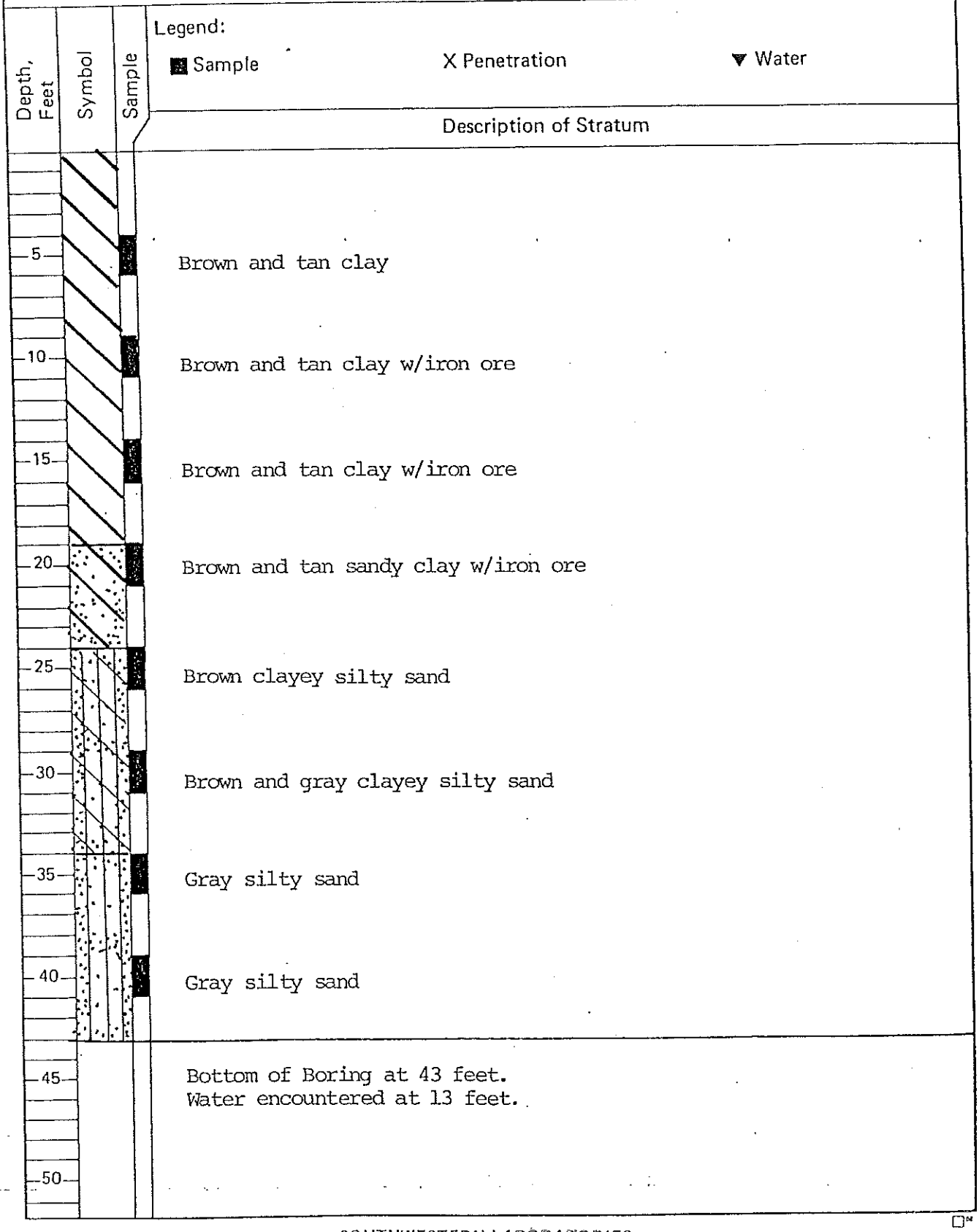
N 6+56.9
W 18+31.3

Legend: ■ Sample X Penetration ▼ Water

Depth, Feet	Symbol	Sample	Description of Stratum
5			Stiff tan and grey silty clay w/iron ore
10			Hard brown silty clay
15			Stiff tan and grey silty clay w/iron ore
20			Dense brown silty sand w/iron ore 13-15-19 34 B/F
25			Firm grey clayey silty sand 15-9-13 22 B/F
30			Dense grey clayey silty sand 8-12-28 40 B/F
35			Very dense grey clayey silty sand 19-31=11" 50 B/11"
40			Very dense grey clayey silty sand 24-26=10" 50 B/10"
45			Bottom of boring at 40 feet.
50			

LOG OF BORING

832964
PROJECT: Monitor Wells at Metal Cleaning Waste Pond BORING NO.: MW-11
CLIENT: Southwestern Electric Power Company LOCATION: Hallsville, TX
N 0+23.50; W 10+40.49
Date: 1/30/86 Type: Rotary Ground Elevation: 361.61



SOUTHWESTERN LABORATORIES

832964

LOG OF BORING

PROJECT: Monitor Wells at Metal Cleaning Waste Pond BORING NO.: MW-12
CLIENT: Southwestern Electric Power Company LOCATION: Hallsville, TX
N 6+13.25; W-6+90.36
Date: 1/30/86 Type: Rotary Ground Elevation: 378.41

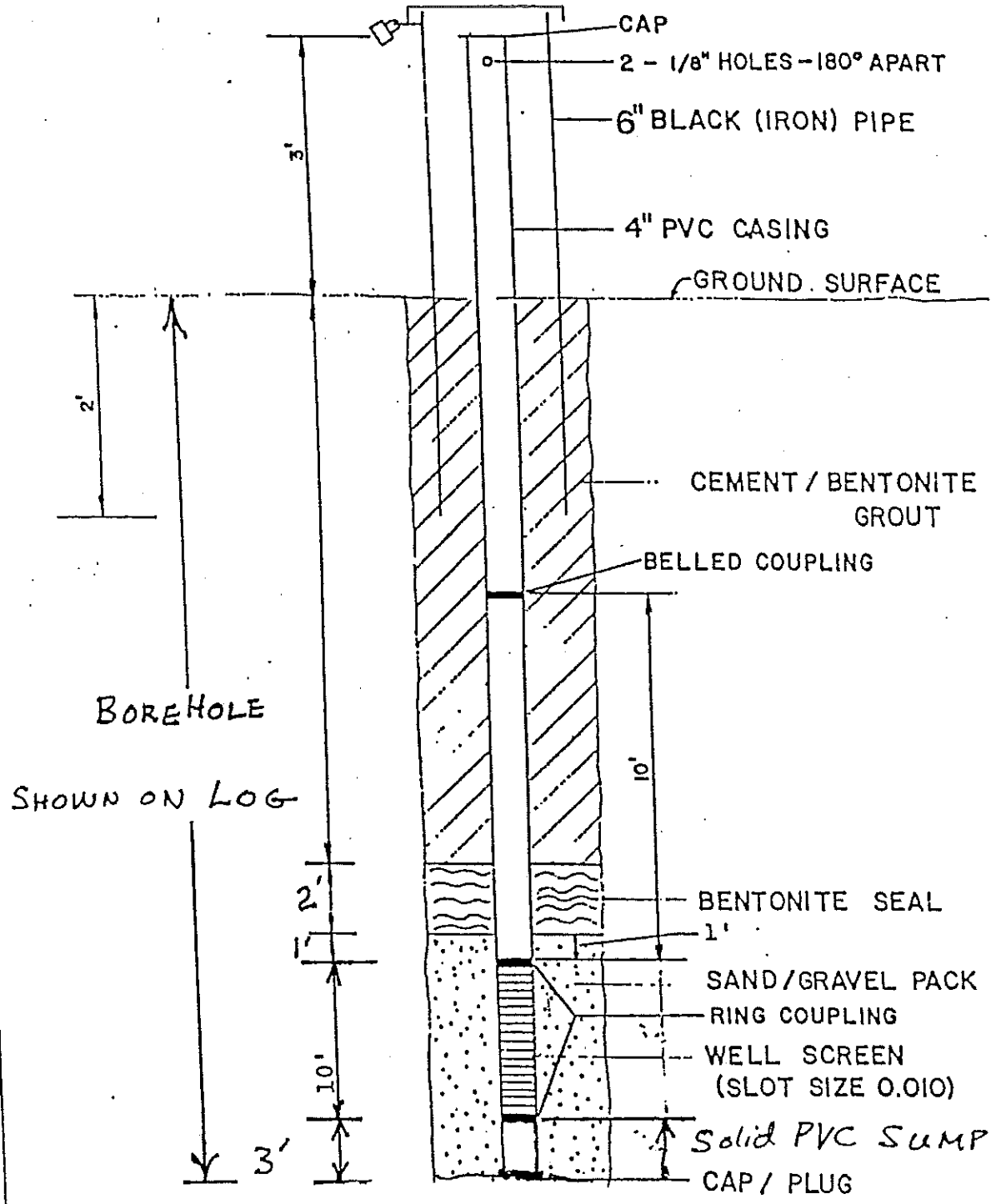
Legend: ■ Sample X Penetration ▼ Water

Depth, Feet	Symbol	Sample	Description of Stratum
5			Brown and tan sandy clay
10			Brown, tan and gray sandy clay
15			Tan and gray sandy clay
20			Brown and tan sandy clay
25			Gray and tan sandy clay
30			Brown and gray clay
35			Brown and gray clay
40			Gray silty sand
45			Gray silty sand
50			Gray silty sand

Water encountered at 27.5 feet.
Bottom of Boring at 51 feet.

SOUTHWESTERN LABORATORIES

MONITOR WELL INSTALLATION

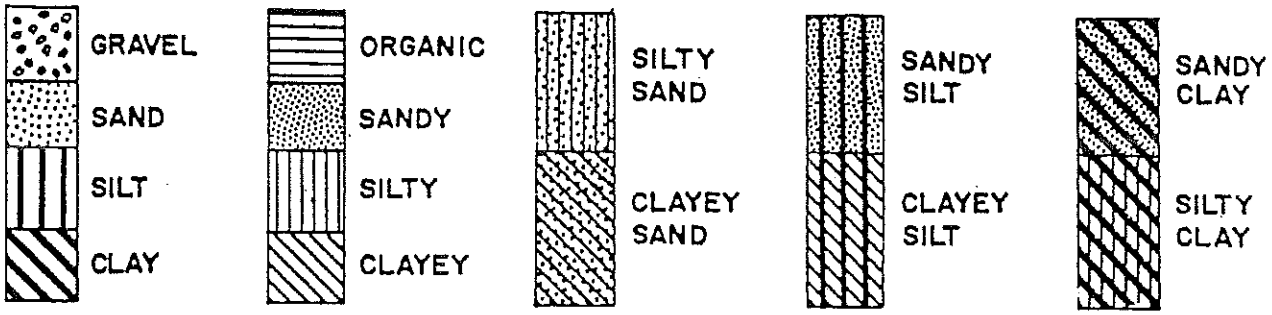


OVERALL LENGTH OF 4" P.V.C.

SOUTHWESTERN LABORATORIES

KEY TO SOIL CLASSIFICATION AND SYMBOLS

SOIL TYPES



CONSISTENCY OF COHESIVE SOILS

DESCRIPTIVE TERM	UNCONFINED COMPRESSIVE STRENGTH TON/SQ. FOOT
Very Soft	Less than 0.25
Soft	0.25 – 0.50
Plastic	0.50 – 1.00
Stiff	1.00 – 2.00
Very Stiff	2.00 – 4.00
Hard	More than 4.00

RELATIVE DENSITY OF COHESIONLESS SOILS

DESCRIPTIVE TERM	STD. PENETRATION RESISTANCE BLOWS/FOOT
Loose	0 – 10
Firm	10 – 30
Dense	30 – 50
Very Dense	More than 50

SOIL STRUCTURE

CALCAREOUS – Containing deposits of calcium carbonate ; generally nodular.

SLICKENSIDED – Having inclined planes of weakness that are slick and glossy in appearance.

LAMINATED – Composed of thin layers of varying color and texture.

FISSURED – Containing shrinkage cracks frequently filled with fine sand or silt. Usually more or less vertical.

INTERBEDDED – Composed of alternate layers of different soil types.

TEST DATA AND SAMPLER SYMBOLS

30% FINER – Percent finer than no. 200 sieve.

– Static water level.

– Hydrostatic water level.

UNDISTURBED SAMPLE

DISTURBED SAMPLE

NO RECOVERY

Southwestern Electric Power Company
Environmental Laboratory
Pirkey Monitoring Wells

DATE	WELL	pH	S.C.	Acid.	Alk.	Hard.	TSS	TDS	Residue	NO3	SO4	Cl-	Silica	Ag	Al	As	Ba	B	CaCO3	Cd	Cr	Cu	Fe	Hg	Pb	Mg	Mn	K	Se	Na	Sr	Zn	COD
May-85	MW-5	6.0	157	0	32	36	103	208	311	0.5	56	9	105		3.5		<0.1		12			<0.05	19.6		<0.05	24	0.09	3	<0.005	16	<0.1	<0.1	12
Nov-85		5.8	158	0	10	30	616	184	800	0.6	53	7	56		<0.2		<0.1		8			<0.05	3.0		<0.05	22	0.20	2	<0.005	17	<0.1	<0.1	MS
Mar-86	MW-5	5.8	185	0	11	24	800	168	968	1.3	59	17	28		<0.2		0.1		12			<0.05	3.0		<0.05	22	0.14	4	<0.005	19	<0.1	0.1	MS
May-86		5.8	218	0	19	36	900	230	1130	2.1	55	7	84		1.1		0.6		8			<0.05	55.0		<0.05	38	0.19	4	<0.005	22	<0.1	0.6	
Jul-86	MW-5	6.2	145	0	8	26	545	250	795	2.1	59	14	63		0.2		0.2		12			<0.05	10.6		<0.05	14	0.11	2	<0.005	21	<0.1	0.3	
Sep-86		5.8	162	0	10	29	950	67	1017	0.3	69	11	76		0.2		0.1		6			<0.05	5.3		<0.05	16	0.05	2	<0.005	18	<0.1	0.2	
Dec-86	MW-5	5.4	172	0	11	24	620	202	722	<0.1	52	17	85		0.3		<0.1		8			<0.05	2.7		<0.05	16	0.09	2	<0.005	19	0.1	0.1	
Feb-87		5.4	135	0	25	18		326		0.2	44	11	75		<0.2		<0.1		4			<0.05	12.2		<0.05	14	0.12	3	<0.005	17	0.1	<0.1	
May-87	MW-5	5.6	181	0	7	20		157		0.3	52	6	80		0.4		<0.1		5			<0.05	0.1		<0.05	12	0.11	3	<0.005	18	<0.1	0.1	
Sep-87		5.6	167	0	13	24		300		1.4	48	8	66		<0.2		0.2		6			<0.05	12.0		<0.05	19	0.12	3	<0.005	14	<0.1	0.1	
Nov-87	MW-5	5.9	162	0	19	23		219		<0.1	48	9	78		<0.2		0.1	0.03	5			<0.05	12.4		<0.05	16	0.13	3	<0.005	15	0.1	0.1	
Feb-88		5.9	153	0	27	22		204		0.1	45	13	*	<0.05	<0.2	<0.01	0.5		<0.21	<0.01	<0.05	<0.05	19.1	<0.001	<0.05	19	0.15	3	<0.005	19	0.1	0.1	
May-88	MW-5	6.0	146	0	7	26		176		0.2	47	6	33	<0.05	0.5	<0.01	0.1		10	<0.01	<0.05	<0.05	13.9	<0.001	<0.05	16	0.10	3	<0.005	17	0.1	0.1	
Sep-88		6.1	162	0	29	23		158		0.2	41	12	**	<0.05	1.4	<0.01	0.2		6	<0.01	<0.05	<0.05	19.5	<0.001	<0.05	22	0.19	3	<0.005	16	0.1	0.1	
Dec-88	MW-5	6.0	169	0	19	23		114		0.2	41	9	80	<0.05	<0.2	<0.01	<0.1		8	<0.01	<0.05	<0.05	15.0	<0.001	<0.05	15	0.17	3	<0.005	18	0.1	0.1	
Mar-89		5.9	143	0	11	24		198		0.1	34	9	69	<0.05	1.9	<0.01	0.1		10	<0.01	<0.05	<0.05	10.2	<0.001	<0.05	14	0.13	4	<0.005	13	<0.1	0.1	
Jun-89	MW-5	5.9	169	0	23	24		218		0.1	45	11	*	<0.05	<0.2	<0.01	<0.1		8	<0.01	<0.05	<0.05	14.7	<0.005	0.06	16	0.12	3	<0.005	21	0.1	0.1	
Sep-89		5.8	162	0	23	30		124		<0.1	34	11	*	<0.05	<0.2	<0.01	0.5		9	<0.01	<0.05	<0.05	20.0	<0.001	<0.05	22	0.13	2	<0.005	23	<0.1	0.4	
Nov-89	MW-5	6.1	178	0	12	32		242		0.1	27	9	*	<0.05	0.3	<0.01	<0.1		4	<0.01	<0.05	<0.05	13.5	<0.001	<0.05	28	0.15	6	<0.005	31	0.1	0.4	
May-85	MW-6	6.1	114	0	16	36	153	129	288	0.5	17	9	32		4.6		<0.1		12			<0.05	27.6		<0.05	24	0.48	5	<0.005	5	<0.1	<0.1	16
Nov-85		5.6	184	0	14	28	432	209	641	0.5	59	10	92		<0.2		<0.1		4			<0.05	9.1		<0.05	24	0.12	2	<0.005	17	<0.1	<0.1	MS
Mar-86	MW-6	5.7	152	0	9	40	1370	75	1445	1.2	42	5	25		0.2		<0.1		14			<0.05	0.3		<0.05	26	0.22	8	<0.005	8	<0.1	0.2	MS
May-86		5.8	129	0	12	36	1645	183	1813	2.6	36	9	49		5.2		0.6		12			<0.05	92.6		<0.05	54	0.40	5	<0.005	9	<0.1	0.9	
Jul-86	MW-6	6.0	112	0	4	50	870	65	935	2.9	41	6	48		0.2		0.2		32			<0.05	8.2		<0.05	18	0.13	3	<0.005	8	<0.1	0.3	
Sep-86		6.1	119	0	22	24	266	151	417	0.1	37	4	50		<0.2		<0.1		6			<0.05	11.3		<0.05	18	0.12	3	<0.005	8	<0.1	0.2	
Dec-86	MW-6	*5.7/4.5	103	45	0	64	376	104	480	<0.1	33	5	45		0.3		<0.1		20			<0.05	0.1		<0.05	44	0.10	4	<0.005	7	<0.1	0.3	
Feb-87		5.6	110	0	14	22		158		0.2	37	4	70		0.4		<0.1		4			<0.05	8.9		<0.05	18	0.13	4	<0.005	6	0.1	0.1	
May-87	MW-6	5.5	138	32	0	20		153		0.1	35	9	60		0.2		<0.1		5			<0.05	0.3		<0.05	12	0.11	4	<0.005	7	<0.1	0.2	
Sep-87		6.0	105	0	13	24		148		0.9	29	2	55		<0.2		0.2		5			<0.05	7.8		<0.05	23	0.05	4	<0.005	4	<0.1	0.2	
Nov-87	MW-6	6.1	106	0	11	24		172		<0.1	37	3	64		<0.2		<0.1	0.03	12			<0.05	12.2		<0.05	12	0.15	4	<0.005	6	0.1	0.1	
Feb-88		5.8	88	0	34	22		140		0.1		4	*	<0.05	<0.2	<0.01	0.2		4	<0.01	<0.05	<0.05	10.5	<0.001	<0.05	18	0.16	4	<0.005	7	0.1	0.1	
May-88	MW-6	6.2	109	0	1	22		142		0.2	37	4	33	<0.05	<0.2	<0.01	<0.1		9	<0.01	<0.05	<0.05	19.2	<0.001	<0.05	13	0.10	4	<0.005	7	0.1	0.1	
Sep-88		6.2	105	0	13	22		130		<0.1	31	4	**	<0.05	0.6	<0.01	0.1		6	<0.01	<0.05	<0.05	15.1	<0.001	<0.05	16	0.05	4	<0.005	6	0.1	0.1	
Dec-88	MW-6	5.6	109	0	7	20		82		0.1	27	3	*	<0.05	<0.2	<0.01	0.1		4	<0.01	<0.05	<0.05	11.9	<0.001	<0.05	16	0.13	5	<0.005	6	0.1	0.2	
Mar-89		5.6	93	5	0	24		140		0.1	23	2	52	<0.05	0.8	<0.01	<0.1		3	<0.01	<0.05	<0.05	12.9	<0.001	<0.05	16	0.14	5	<0.005	9	<0.1	0.2	
Jun-89	MW-6	6.0	96	0	7	22		138		0.1	33	3	*	<0.05	0.2	<0.01	<0.1		6	<0.01	<0.05	<0.05	9.4	<0.001	0.05	16	0.11	4	<0.005	7	0.1	0.1	
Sep-89			95	0	6	22		136		<0.1	27	3	*	<0.05	<0.2	<0.01	0.5		8	0.01	<0.05	<0.05	9.0	<0.001	<0.05	20	0.12	3	<0.005	12	<0.1	0.4	
Oct-89	MW-6	6.0	113	0	4	22		136		<0.1	28	3	*	<0.05	<0.2	<0.01	<0.1		5	<0.01	<0.05	<0.05	9.3	<0.001	<0.05	16	0.13	3	<0.005	14	<0.1	0.4	
May-86	MW-7	5.6	132	0	12	32	17	132	199	0.5	44	10	105		2.1		<0.1		18			<0.05	10.6		<0.05	20	0.07	2	<0.005	10	<0.1	<0.1	5
Nov-86		5.6	126	0	2	36	516	129	645	0.5	29	8	27		<0.2		<0.1		12			<0.05	0.8		<0.05	24	0.17	4	<0.005	8	<0.1	<0.1	MS
Mar-86	MW-7	3.8	528	53	0	94	300	420	720	7.1	129	224	93		11.3		0.5		24			<0.05	5.9		<0.05	70	0.15	5	<0.005	30	<0.1	0.2	MS
May-86		3.5	624	75	0	132	310	694	1004	13.9	155	197	94		20.6		0.3		44			<0.05	7.0		<0.05	88	0.16	5	<0.005	70	<0.1	0.5	
Jul-86	MW-7	3.7	693		0	168	477	777	1254	2.6	215	294	90		27.6		<0.1		54			<0.05	4.5		<0.05	114	0.18	3	<0.005	70	<0.1	0.8	
Aug-86		3.6	787	133	0	176	13	768	770	3.3	25	267	91		32.3		<0.1		52			<0.05	6.2		<0.05	120	0.19	3	<0.005	48	<0.1	0.6	
Sep-86	MW-7	3.7	732	275	0	166	173	818	996	3.3	238	597	89		27.6		0.1		50			<0.05	3.2		<0.05	118	0.15	3	<0.005	70	<0.1	0.7	

Data Documents 1412 CCR-00

Southwestern Electric Power Company
Environmental Laboratory
Pirkey Monitoring Wells

DATE	WELL	pH	B.C.	Acid.	Alk.	Hard.	TSS	TDS	Residue	NO3	SO4	Cl-	Silica	Ag	Al	As	Ba	B	CaCO3	Cd	Cr	Cu	Fe	Hg	Pb	Mg	Mn	K	Se	Na	Sr	Zn	COD
Dec-85		3.3	1122	279	0	240	50	1092	1148	2.5	343	555	93		43.8		<0.1		84			<0.05	2.9		<0.05	156	0.27	4	<0.005	99	0.4	0.9	
Feb-86	MW-7	3.2	1264	348	0	110		1066		2.5	296	213	100		43.3		<0.1		39			<0.05	1.1		0.08	71	0.26	2	<0.005	90	0.5	0.3	
May-86		3.3	1196	288	0	206		1092		2.7	316	197	100		42.1		<0.1		76			<0.05	1.0		<0.05	132	0.30	4	<0.005	90	0.3	0.7	
Sep-86	MW-7	3.2	1163	150	0	245		1132		27.9	316	140	85		45.1		0.1		94			<0.05	1.4		<0.05	181	0.25	4	<0.005	80	0.1	0.9	
Nov-86		3.4	1316	415	0	309		1430		1.8	519	291	84		52.6		<0.1	11.90	104			<0.05	1.1		<0.05	205	0.30	4	<0.005	90	0.4	0.7	
Feb-87	MW-7	3.2	1510	573	0	490		2060		2.8	781	272	*	<0.05	85.0	<0.01	0.1		220	0.01	<0.05	<0.05	1.7	0.022	<0.05	270	0.49	5	<0.005	160	0.6	1.3	
Mar-87		3.4	2170	475	0	530		2444		2.5	761	200	*	<0.05	88.2	<0.01	0.1		120	0.01	<0.05	<0.05	2.2	0.013	<0.05	350	0.46	6	<0.005	140	0.6	1.5	
May-87	MW-7	3.6	1707	490	0	547		1591		3.2	778	271	132	<0.05	73.0	<0.01	<0.1		190	0.01	<0.05	<0.05	3.1	<0.001	<0.05	378	0.38	5	<0.005	120	0.4	1.3	
Sep-87		3.4	1495	490	0	369		1545		1.5	543	156	**	<0.05	52.5	<0.01	0.2		130	<0.01	<0.05	<0.05	10.7	0.003	<0.05	230	0.50	5	<0.005	110	0.3	1.2	
Dec-87	MW-7	3.5	611	200	0	140		586		1.5	174	102	45	<0.05	15.2	<0.01	0.1		44	<0.01	<0.05	<0.05	2.7	0.008	<0.05	95	0.17	3	<0.005	80	0.2	0.6	
Mar-88		3.5	684	140	0	130		641		1.3	156	104	125	<0.05	20.3	<0.01	<0.1		36	<0.01	<0.05	<0.05	3.5	<0.002	<0.05	94	0.23	5	<0.005	80	0.2	0.6	
Jun-88	MW-7	3.5	612	90	0	107		640		1.4	131	93	*	<0.05	12.0	<0.01	<0.1		29	0.01	<0.05	<0.05	2.5	0.002	<0.05	78	0.13	3	<0.005	45	0.2	0.4	
Sep-88		3.7	373	76	0	82		352		<0.1	146	26	*	<0.05	9.5	<0.01	0.5		22	0.01	<0.05	<0.05	5.3	<0.001	<0.05	60	0.17	2	<0.005	21	<0.1	0.7	
Nov-88	MW-7	3.7	355	155	0	62		378		0.2	83	13	*	<0.05	6.1	<0.01	0.2		14	0.01	<0.05	<0.05	4.5	<0.001	<0.05	42	0.14	6	<0.005	26	0.1	0.7	

*Unable to read due to ferrous interference

May-85	MW-10	5.9	140	0	32	23	53	142	195	0.5	15	30	54		3.7		0.2		14			<0.05	15.0		<0.05	14	0.40	2	<0.005	12	<0.1	<0.1	2
Nov-85		4.5	38	0	4	14	316	67	383	1.2	12	4	24		<0.2		<0.1		5			<0.05	0.2		<0.05	12	0.01	<1	<0.005	6	<0.1	<0.1	NS
Mar-86	MW-10	5.3	130	0	8	28	970	110	1080	4.0	31	57	25		<0.2		0.2		12			<0.05	0.5		<0.05	16	0.21	2	<0.005	13	<0.1	0.1	NS
May-86		5.1	145	0	9	28	584	191	775	1.7	11	27	45		2.2		0.9		12			<0.05	11.0		<0.05	16	0.20	2	<0.005	17	<0.1	0.4	
Jul-86	MW-10	5.2	155	0	3	28	192	110	302	2.5	23	46	49		0.2		0.2		18			<0.05	2.4		<0.05	10	0.09	3	<0.005	13	<0.1	0.1	
Sep-86		5.2	102	0	5	20	1650	100	1750	0.1	13	6	40		<0.2		0.5		6			<0.05	0.3		<0.05	16	0.07	1	<0.005	13	<0.1	0.1	
Dec-86	MW-10	4.6	112	0	3	16	88	110	198	<0.1	8	50	37		0.3		0.6		6			<0.05	0.3		<0.05	10	0.05	1	<0.005	13	0.1	0.1	
Feb-87		4.7	122	0	5	17		110		0.2	10	23	40		<0.2		0.7		6			<0.05	1.7		<0.05	12	0.09	1	<0.005	12	0.1	<0.1	
May-87	MW-10	4.7	135	0	3	20		93		<0.1	9	17	40		0.2		0.4		4			<0.05	0.5		<0.05	16	0.15	1	<0.005	13	<0.1	<0.1	
Sep-87		5.0	198	0	4	15		110		<0.1	7	20	37		0.4		0.6		8			<0.05	1.2		<0.05	8	0.06	1	<0.005	11	0.1	<0.1	
Nov-87	MW-10	5.0	108	0	4	16		110		<0.1	7	20	27		0.4		0.6	0.01	8			<0.05	1.2		<0.05	8	0.06	1	<0.005	11	0.1	<0.1	
Feb-88		4.6	90	0	9	5		110		0.2	10	23	*	<0.05	<0.2	<0.01	0.5		2	0.01	<0.05	<0.05	1.3	<0.001	<0.05	6	0.05	1	<0.005	15	0.1	<0.1	
May-88	MW-10	4.7	103	0	2	17		166		0.5	12	25	31	<0.05	0.5	<0.01	0.5		4	<0.01	<0.05	<0.05	1.3	<0.001	<0.05	13	0.04	1	<0.005	14	0.1	0.1	
Sep-88		5.1	116	0	4	18		80		<0.1	11	24	**	<0.05	0.3	<0.01	0.4		4	<0.01	<0.05	<0.05	2.2	<0.001	<0.05	14	0.07	1	<0.005	13	0.1	0.1	
Dec-88	MW-10	5.0	120	0	1	10		40		0.1	10	22	31	<0.05	0.2	<0.01	0.3		4	<0.01	<0.05	<0.05	1.9	<0.001	0.13	6	0.04	4	<0.005	16	0.2	0.1	
Mar-89		5.0	108	0	4	18		124		0.1	7	24	36	<0.05	0.2	<0.01	0.5		4	<0.01	<0.05	<0.05	1.6	<0.001	<0.05	14	0.06	1	<0.005	20	0.1	0.1	
Jun-89	MW-10	5.0	114	0	3	16		118		0.1	13	25	40	<0.05	<0.2	<0.01	0.2		4	<0.01	<0.05	<0.05	0.5	<0.001	<0.05	12	<0.01	1	<0.005	23	<0.1	<0.1	
Sep-89		5.4	123	0	2	20		123		<0.1	20	27	37	<0.05	0.4	<0.01	0.2		6	0.01	<0.05	<0.05	3.0	<0.001	<0.05	14	0.04	2	<0.005	36	<0.1	0.3	
Oct-89	MW-10	5.3	148	0	3	8		136		<0.1	16	23	29	<0.05	<0.2	<0.01	0.2		2	0.01	<0.05	<0.05	1.7	<0.001	<0.05	6	0.02	5	<0.005	39	0.1	0.3	

Jun-86	M-11	6.0/6.4	253	0	23	38	17070	207	17277	0.1	55	27	24		<0.2		0.3		14			0.06	16.6		<0.05	24	0.48	3	<0.005	22	<0.1	0.8	
Jul-86	(MW-11)	6.1	209	0	34	50	19475	160	19635	3.1	64	32	30		0.2		0.2		18			<0.05	18.4		<0.05	32	0.37	3	<0.005	22	<0.1	0.6	
Sep-86		6.0	209	0	39	54	744	176	920	0.1	41	53	40		<0.2		0.3		16			<0.05	10.3		<0.05	38	0.33	2	<0.005	15	<0.1	0.1	
Dec-86	M-11	5.7	201	0	24	60	340	142	482	<0.1	33	50	39		<0.2		<0.1		16			<0.05	0.6		<0.05	44	0.33	2	<0.005	14	0.2	<0.1	
Feb-87	(MW-11)	5.5	205	0	24	47		176		0.2	31	28	40		0.4		0.1		14			<0.05	8.0		<0.05	33	0.25	3	<0.005	10	0.1	<0.1	
May-87		5.6	218	0	11	50		155		<0.1	34	3	46		<0.2		<0.1		16			<0.05	0.2		<0.05	34	0.25	3	<0.005	12	0.1	0.1	
Sep-87		5.9	190	0	35	51		200		0.3	30	24	48		<0.2		0.2		6			<0.05	13.2		<0.05	45	0.24	3	<0.005	10	<0.1	0.1	
Nov-87	M-11	6.0	178	0	31	56		204		<0.1	36	25	57		0.2		0.1	0.11	14			<0.05	18.4		<0.05	42	0.25	3	<0.005	10	0.1	0.1	
Feb-88	(MW-11)	5.9	152	0	42	42		178		0.1	32	27	*	<0.05	<0.2	<0.01	0.2		10	<0.01	<0.05	<0.05	26.0	<0.001	<0.05	32	0.25	3	<0.005	13	0.1	0.1	
May-88		6.3	180	0	18	60		332		0.4	38	28	64	<0.05	0.3	<0.01	0.1		14	<0.01	<0.05	<0.05	18.2	<0.001	<0.05	45	0.20	3	<0.005	12	0.1	0.1	

Data Documents 1412 CCR-26

Southwestern Electric Power Company
Environmental Laboratory
Pirkey Monitoring Wells

DATE	WELL	pH	E.C.	Acid.	Alk.	Hard.	TSS	TDS Residue	HCO3	SO4	Cl-	Silica	Ag	Al	As	Ba	B	CaCO3	Cd	Cr	Cu	Fe	Hg	Pb	Mg	Mn	K	Se	Na	Sr	Zn	COD
Sep-88	M-11	5.2	194	0	32	58		136	<0.1	36	30	##	<0.50	0.3	<0.01	0.2		14	<0.01	<0.05	<0.05	20.4	<0.001	<0.05	44	0.29	3	<0.005	13	0.1	0.1	
Dec-88	(MW-11)	5.9	201	0	17	56		102	<0.1	36	34	32	<0.05	0.2	<0.01	<0.1		18	<0.01	<0.05	<0.05	18.7	<0.001	<0.05	38	0.16	3	<0.005	13	0.1	0.1	
Mar-89		6.0	203	10	0	72		226	0.1	29	30	36	<0.05	<0.2	<0.01	<0.1		18	<0.01	<0.05	<0.05	21.4	<0.001	<0.05	54	0.12	4	<0.005	17	0.1	0.1	
Jun-89	M-11	5.8	117	0	17	50		218	0.1	22	35	78	<0.05	0.2	<0.01	<0.1		16	<0.01	<0.05	<0.05	18.4	<0.001	<0.05	34	0.19	3	<0.005	14	0.1	<0.1	
Sep-89	(MW-11)	5.9	188	0	29	56		130	0.2	31	33	*	<0.05	<0.2	<0.01	0.6		16	0.01	<0.05	<0.05	21.0	<0.001	<0.05	46	0.27	3	<0.005	15	<0.1	0.4	
Nov-89		5.9	202	0	13	46		214	<0.1	29	25	*	<0.05	<0.2	<0.01	<0.1		14	0.01	0.05	<0.05	13.1	<0.001	<0.05	32	0.23	7	<0.005	25	0.1	0.3	

*Unable to read due to ferrous interference

Jun-88	M-10	*5.3	76.5	86	0	12	6	4060	113	4112	0.2	10	11	30		0.4		0.5		2			<0.05	4.2		<0.05	4	<0.01	1	<0.005	13	<0.1	0.8	
Sep-88	(MW-12)	5.0	64	2	10	1435	115	1600	0	21.0	17	57	1		0.5		0.5		2			<0.05	1.1		<0.05	8	0.02	1	<0.005	10	<0.1	0.2	
Dec-88		4.9	77	61	0	10	3690	190	3930	0.1	7	23	48		0.3		0.1		4			<0.05	1.4		<0.05	6	0.02	2	<0.005	10	0.1	0.1	
Feb-89	M-10	4.5	60	0	86	4		112	0.2	6	10	43		0.4		0.1		1			<0.05	0.8		<0.05	3	0.04	1	<0.005	8	0.1	<0.1	
May-89	(MW-12)	4.3	86	27	0	10		128	0.2	6	10	52		<0.2		<0.1		4			<0.05	0.1		<0.05	6	0.02	1	<0.005	9	<0.1	<0.1	
Sep-89		4.2	59	10	0	6		100	5.7	6	9	46		<0.2		0.1		2			<0.05	0.3		<0.05	3	<0.01	2	<0.005	6	<0.1	<0.1	
Nov-89	M-10	4.4	135	14	0	10		108	0.3	6	11	47		0.2		<0.1	<0.01	4			<0.05	0.2		<0.05	4	0.03	1	<0.005	8	0.1	0.1	
Feb-88	(MW-12)	4.0	58	0	3	6		92	0.3	9	10	*	<0.05	0.2	<0.01	0.1		2	<0.01	<0.05	<0.05	1.1	<0.001	<0.05	4	0.04	1	<0.005	9	<0.1	0.1	
May-88		4.5	64	0	2	20		120	0.7	9	12	32	<0.05	0.3	<0.01	0.1		4	<0.01	<0.05	<0.05	1.9	<0.001	<0.05	16	0.02	1	<0.005	9	<0.1	0.1	
Sep-88	M-10	**6.7	125	0	33	44		130	0.3	7	12	44	<0.05	0.2	<0.01	0.1		23	<0.01	<0.05	<0.05	1.3	<0.001	<0.05	6	0.02	2	<0.005	9	<0.1	0.1	
Dec-88	(MW-12)	4.8	72	10	0	6		104	0.2	8	12	33	<0.05	<0.2	<0.01	<0.1		2	<0.01	<0.05	<0.05	1.3	<0.001	<0.05	4	0.03	2	<0.005	9	0.1	0.1	
Mar-89		4.8	60	0	1	8		100	0.4	4	9	33	<0.05	<0.2	<0.01	0.2		4	<0.01	<0.05	<0.05	0.4	<0.001	<0.05	8	<0.01	1	<0.005	9	<0.1	<0.1	
Jun-89	M-10	4.4	54	10	0	10		102	0.3	5	8	32	<0.05	0.3	<0.01	<0.1		2	<0.01	<0.05	<0.05	0.9	<0.001	<0.05	8	0.02	1	<0.005	11	<0.1	0.3	
Sep-89	(MW-12)	4.5	53	25	0	10		46	<0.1	4	9	32	<0.05	<0.2	<0.01	0.5		2	0.02	0.05	<0.05	0.8	<0.001	<0.05	4	<0.01	7	<0.005	22	<0.1	0.3	
Oct-89		4.5	75	80	0	6		136	0.2	6	7	32	<0.05	<0.2	<0.01	<0.1		2	0.02	0.05	<0.05	0.8	<0.001	<0.05	4	<0.01	7	<0.005	22	<0.1	0.3	
Feb-88	MW-13	5.9	169	0	29	56		360	<0.1	52	45	*	<0.05	0.2	<0.01	0.2		28	<0.01	<0.05	<0.05	18.6	<0.001	<0.05	48	0.74	12	<0.005	29	0.2	0.1	
Mar-88		5.1	350	0	158	74		313	<0.1	56	36	##	<0.05	0.2	<0.01	0.3		18	<0.01	<0.05	<0.05	24.4	<0.001	<0.05	56	0.90	4	<0.005	19	0.1	0.1	
May-88	MW-13	6.0	256	0	17	81		274	0.6	52	50	47	<0.05	0.3	<0.01	0.2		30	0.01	<0.05	<0.05	15.4	<0.001	<0.05	51	1.25	4	<0.005	18	0.2	0.1	
Sep-88		6.0	293	0	23	74		300	<0.1	54	49	##	<0.05	<0.2	<0.01	0.2		32	<0.01	<0.05	<0.05	25.5	<0.001	<0.05	52	0.83	5	<0.005	19	0.1	0.1	
Dec-88	MW-13	5.7	284	0	14	66		340	0.2	54	43	46	<0.05	0.2	<0.01	0.1		26	<0.01	<0.05	<0.05	25.7	<0.001	<0.05	46	0.49	7	<0.005	22	0.2	0.2	
Mar-89		5.0	264	0	34	78		246	0.1	0	32	56	<0.05	<0.2	<0.01	0.2		22	<0.01	<0.05	<0.05	22.7	<0.001	<0.05	52	0.43	7	<0.005	23	0.3	0.1	
Jun-89	MW-13	6.1	331	0	48	80		286	<0.1	48	44	*	<0.05	0.2	<0.01	<0.1		18	<0.01	<0.05	<0.05	24.6	<0.001	<0.05	62	0.38	5	<0.005	31	<0.2	<0.1	
Sep-89		6.0	335	0	29	80		222	<0.1	64	5	*	<0.05	0.2	<0.01	0.5		18	<0.01	<0.05	<0.05	37.0	<0.001	<0.05	62	0.48	4	<0.005	25	0.1	0.4	
Nov-89	MW-13	6.0	366	0	26	86		338	<0.1	82	44	*	<0.05	<0.2	<0.01	0.1		36	<0.01	<0.05	<0.05	22.8	<0.001	<0.05	86	0.50	11	<0.005	43	0.1	0.4	
Feb-88	MW-14	6.4	126	0	81	78		176	0.4	16	16	*	<0.05	<0.2	<0.01	0.3		58	<0.01	<0.05	<0.05	0.2	<0.001	<0.05	28	0.66	3	<0.005	10	0.1	0.1	
May-88		6.1	164	0	22	50		170	0.5	26	22	32	<0.05	0.3	<0.01	<0.1		17	<0.01	<0.05	<0.05	21.4	<0.001	<0.05	33	0.28	3	<0.005	9	0.1	0.1	
Sep-88	MW-14	6.1	187	0	45	50		146	0.2	24	18	##	<0.05	0.6	<0.01	0.2		10	<0.01	<0.05	<0.05	23.2	<0.001	<0.05	40	0.28	3	<0.005	9	0.1	<0.1	
Dec-88		5.5	72	0	5	18		124	0.1	13	9	34	<0.05	<0.2	<0.01	0.1		6	<0.01	<0.05	<0.05	5.1	<0.001	<0.05	12	0.10	2	<0.005	8	0.1	0.2	
Mar-89	MW-14	5.5	97	0	7	18		99	0.1	7	11	33	<0.05	0.3	<0.01	0.2		14	<0.01	<0.05	<0.05	2.3	<0.001	<0.05	4	0.08	2	<0.005	9	0.1	0.1	
Jun-89		4.5	71	0	2	16		94	0.2	8	11	29	<0.05	0.3	<0.01	0.2		4	<0.01	<0.05	<0.05	0.3	<0.001	<0.05	12	<0.01	1	<0.005	10	0.1	<0.1	
Sep-89	MW-14	5.0	92	17	0	20		84	<0.1	5	16	32	<0.05	0.2	<0.01	0.9		6	<0.01	<0.05	<0.05	2.5	<0.001	<0.05	14	0.05	3	<0.005	12	<0.1	0.3	
Nov-89		5.2	101	0	7	24		133	<0.1	8	15	32	<0.05	<0.2	<0.01	0.3		14	<0.01	<0.05	<0.05	2.2	<0.001	<0.05	16	0.02	11	<0.005	33	<0.1	0.4	
Feb-88	MW-15	5.5	78	0	29	24		110	0.2	12	10	*	<0.05	<0.2	<0.01	0.2		12	<0.01	<0.05	<0.05	3.1	<0.001	<0.05	12	0.45	2	<0.005	9	0.1	0.1	
May-88		5.9	101	0	13	23		158	0.5	15	14	31	<0.05	0.3	<0.01	<0.1		6	<0.01	<0.05	<0.05	2.6	<0.001	<0.05	17	0.13	2	<0.005	9	<0.1	0.1	
Sep-88	MW-15	6.0	144	0	25	46		134	<0.1	24	20	##	<0.05	0.9	<0.01	0.1		10	<0.01	<0.05	<0.05	20.8	<0.001	<0.05	36	0.21	3	<0.005	9	0.1	0.1	
Dec-88		5.2	89	0	4	14		138	0.1	12	11	33	<0.05	0.2	<0.01	0.1		4	<0.01	<0.05	<0.05	1.5	<0.001	<0.05	10	0.07	2	<0.005	9	0.1	0.1	

Data Documents 1412 CGB-28

Southwestern Electric Power Company
Environmental Laboratory
Pirkey Monitoring Wells

DATE	WELL	pH	E.C.	Acid.	Alk.	Hard.	TSS	TDS Residue	NO3	SO4	Cl-	Silica	Ag	Al	As	Ba	B	CaCO3	Cd	Cr	Cu	Fe	Hg	Pb	Mg	Mn	K	Se	Na	Sr	Zn	COD
Mar-89	MW-15	5.5	59	0	6	12		99	0.1	5	9	50	<0.05	<0.2	<0.01	0.3		4	<0.01	<0.05	<0.05	3.8	<0.001	<0.05	8	0.67	2	<0.005	10	0.1	0.1	
Sep-89		4.9	73	16	0	16		68	<0.1	4	17	44	<0.05	0.8	<0.01	0.9		6	<0.01	<0.05	<0.05	4.7	<0.001	<0.05	10	0.04	1	<0.005	14	<0.1	0.5	
Nov-89	MW-15	4.3	99	66	0	12		132	0.1	3	15	51	<0.05	<0.2	<0.01	0.4		2	<0.01	<0.05	<0.05	0.4	<0.001	<0.05	10	0.02	10	<0.005	35	<0.1	0.4	

Southwestern Electric Power Company
P. O. BOX 21106 - SHREVEPORT, LOUISIANA 71156

March 29, 1988

Mr. William Gibson
Texas Water Commission
2916 Teague Drive
Tyler, TX 75701-3734

Re: Southwestern Electric Power Company
H. W. Pirkey Power Plant
Metal Cleaning Pond - Groundwater Assessment
Monitor Well Analytical Data

Dear Mr. Gibson:

Please find enclosed the analysis results for groundwater samples collected at Southwestern Electric Power Company's H. W. Pirkey Power Plant in February, 1988 for the monitor wells MW-5, MW-6, MW-7, MW-10, MW-11, MW-12, MW-13, MW-14, and MW-15. Monitor wells MW-13, MW-14 and MW-15 were installed on February 23-26, 1988 in order to provide additional data needed to determine what impacts if any, the Metal Cleaning Pond may have had on groundwater at this facility.

The above referenced nine monitor wells will be sampled and analyzed quarterly for the next two years as a part of the Metal Cleaning Pond Groundwater Assessment. I will provide you with the quarterly groundwater analytical data generated during this period.

Please contact me at the above address or telephone me at (318)221-2604, Ext. 252 should you have any questions concerning the enclosed analyses.

Sincerely,

Brian Bond

Brian Bond
Environmental Specialist

BB/db
Enclosure
xc: Mr. J. A. Pruett, w/o
Mr. R. T. Whetstone, w/o
Mr. E. M. Williams, w/o
Mr. A. I. Melson, w/o
File, w

Southwestern Electric Power Company
Environmental Laboratory
Pirkey Monitoring Wells

DATE	WELL	pH	E.C.	Acidity*	Alk.	Hard.	TSS	TDS	Residue	Nitrate as N	Sulfate	Chloride	Silica	Ag	Al	As	Ba	CaCO3	Cd	Cr	Cu	Fe	Hg	Pb	Mg	Mn	K	Se	Na	Sr	Zn
Feb-88	MW-5	5.9	152	0	27	22		204		0.1	45	13	**	<0.05	<0.2	<0.01	0.2	<0.01	<0.01	<0.05	<0.05	19.1	<0.001	<0.05	18	0.15	3	<0.005	19	0.1	0.1
Feb-88	MW-6	5.3	88	0	24	22		140		0.1	9	4	**	<0.05	<0.2	<0.01	0.2	4	<0.01	<0.05	<0.05	10.5	<0.001	<0.05	18	0.15	4	<0.005	7	0.1	0.1
Feb-88	MW-7	3.2	1510	578	0	490		2060		2.8	781	272	**	<0.05	85.0	<0.01	0.1	220	0.01	<0.05	<0.05	1.7	0.022	<0.05	270	0.49	5	<0.005	160	0.5	1.3
Feb-88	MW-10	4.6	90	0	9	8		110		0.2	10	23	**	<0.05	<0.2	<0.01	0.5	2	0.01	<0.05	<0.05	1.3	<0.001	<0.05	6	0.05	1	<0.005	15	0.1	<0.1
Feb-88	MW-11	5.9	152	0	42	42		178		0.1	32	27	**	<0.05	<0.2	<0.01	0.2	10	<0.01	<0.05	<0.05	20.0	<0.001	<0.05	32	0.25	3	<0.005	13	0.1	0.1
Feb-88	MW-12	4.0	58	0	3	6		92		0.3	9	10	**	<0.05	0.2	<0.01	0.1	2	<0.01	<0.05	<0.05	1.1	<0.001	<0.05	4	0.04	1	<0.005	9	<0.1	0.1
Feb-88	MW-13	5.9	169	0	39	66		260		<0.1	52	45	**	<0.05	0.2	<0.01	0.2	22	<0.01	<0.05	<0.05	18.6	<0.001	<0.05	44	0.74	12	<0.005	29	0.2	0.1
Feb-88	MW-14	6.4	126	0	81	78		178		0.4	16	16	**	<0.05	<0.2	<0.01	0.3	58	<0.01	<0.05	<0.05	0.2	<0.001	<0.05	20	0.60	3	<0.005	10	0.1	0.1
Feb-88	MW-15	5.5	78	0	29	24		110		0.2	12	10	**	<0.05	<0.2	<0.01	0.2	12	<0.01	<0.05	<0.05	3.1	<0.001	<0.05	12	0.45	2	<0.005	9	0.1	0.1

** UNABLE TO RUN DUE TO FLUORIDE INTERFERENCE

Southwestern Electric Power Company
Environmental Laboratory
Pirkey Monitoring Wells

DATE	WELL	pH	E.C.	Acidity*	Alk.	Hard.	TSS	TDS	Residue	Nitrate as N	Sulfate	Chloride	Silica	Ag	Al	As	Ba	CaCO3	Cd	Cr	Cu	Fe	Hg	Pb	Mg	Mn	K	Se	Na	Sr	Zn
Feb-88	MW-5	5.9	152	0	27	22		204		0.1	45	13	**	<0.05	<0.2	<0.01	0.2	<0.01	<0.01	<0.05	<0.05	19.1	<0.001	<0.05	18	0.15	3	<0.005	19	0.1	0.1
Feb-88	MW-6	5.3	88	0	24	22		140		0.1	9	4	**	<0.05	<0.2	<0.01	0.2	4	<0.01	<0.05	<0.05	10.5	<0.001	<0.05	18	0.15	4	<0.005	7	0.1	0.1
Feb-88	MW-7	3.2	1510	570	0	490		2060		2.8	781	272	**	<0.05	85.0	<0.01	0.1	220	0.01	<0.05	<0.05	1.7	0.022	<0.05	270	0.49	5	<0.005	160	0.5	1.3
Feb-88	MW-10	4.6	90	0	9	8		110		0.2	10	23	**	<0.05	<0.2	<0.01	0.5	2	0.01	<0.05	<0.05	1.3	<0.001	<0.05	6	0.05	1	<0.005	15	0.1	<0.1
Feb-88	MW-11	5.9	152	0	42	42		178		0.1	32	27	**	<0.05	<0.2	<0.01	0.2	10	<0.01	<0.05	<0.05	20.0	<0.001	<0.05	32	0.25	3	<0.005	13	0.1	0.1
Feb-88	MW-12	4.0	58	0	3	6		92		0.3	9	10	**	<0.05	0.2	<0.01	0.1	2	<0.01	<0.05	<0.05	1.1	<0.001	<0.05	4	0.04	1	<0.005	9	<0.1	0.1
Feb-88	MW-13	5.9	169	0	39	66		260		<0.1	52	45	**	<0.05	0.2	<0.01	0.2	22	<0.01	<0.05	<0.05	18.6	<0.001	<0.05	44	0.74	12	<0.005	29	0.2	0.1
Feb-88	MW-14	6.4	126	0	81	78		178		0.4	16	16	**	<0.05	<0.2	<0.01	0.3	58	<0.01	<0.05	<0.05	0.2	<0.001	<0.05	20	0.60	3	<0.005	10	0.1	0.1
Feb-88	MW-15	5.5	78	0	29	24		110		0.2	12	10	**	<0.05	<0.2	<0.01	0.2	12	<0.01	<0.05	<0.05	3.1	<0.001	<0.05	12	0.45	2	<0.005	9	0.1	0.1

** UNABLE TO RUN DUE TO FERROUS INTERFERENCE

Southwestern Electric Power Company
Environmental Laboratory
Pirkey Monitoring Wells

DATE	WELL	pH	E.C.	Acidity*	Alk.	Hard.	TSS	TDS	Residue	Nitrate as N	Sulfate	Chloride	Silica	Ag	Al	As	Ba	CaCO3	Cd	Cr	Cu	Fe	Hg	Pb	Mg	Mn	K	Se	Na	Sr	Zn
Feb-88	MW-5	5.9	152	0	27	22		204		0.1	45	13	**	<0.05	<0.2	<0.01	0.2	<0.01	<0.01	<0.05	<0.05	19.1	<0.001	<0.05	18	0.15	3	<0.005	19	0.1	0.1
Feb-88	MW-6	5.3	88	0	24	22		140		0.1	9	4	**	<0.05	<0.2	<0.01	0.2	4	<0.01	<0.05	<0.05	10.5	<0.001	<0.05	18	0.15	4	<0.005	7	0.1	0.1
Feb-88	MW-7	3.2	1510	578	0	490		2060		2.8	701	272	**	<0.05	85.0	<0.01	0.1	220	0.01	<0.05	<0.05	1.7	0.022	<0.05	270	0.49	5	<0.005	160	0.5	1.3
Feb-88	MW-10	4.6	90	0	9	8		110		0.2	10	23	**	<0.05	<0.2	<0.01	0.5	2	0.01	<0.05	<0.05	1.3	<0.001	<0.05	6	0.05	1	<0.005	15	0.1	<0.1
Feb-88	MW-11	5.9	152	0	42	42		178		0.1	32	27	**	<0.05	<0.2	<0.01	0.2	10	<0.01	<0.05	<0.05	20.0	<0.001	<0.05	32	0.25	3	<0.005	13	0.1	0.1
Feb-88	MW-12	4.0	58	0	3	6		92		0.3	9	10	**	<0.05	0.2	<0.01	0.1	2	<0.01	<0.05	<0.05	1.1	<0.001	<0.05	4	0.04	1	<0.005	9	<0.1	0.1
Feb-88	MW-13	5.9	169	0	39	66		260		<0.1	52	45	**	<0.05	0.2	<0.01	0.2	22	<0.01	<0.05	<0.05	18.6	<0.001	<0.05	44	0.74	12	<0.005	29	0.2	0.1
Feb-88	MW-14	6.4	126	0	81	78		178		0.4	16	16	**	<0.05	<0.2	<0.01	0.3	58	<0.01	<0.05	<0.05	0.2	<0.001	<0.05	20	0.60	3	<0.005	10	0.1	0.1
Feb-88	MW-15	5.5	78	0	29	24		110		0.2	12	10	**	<0.05	<0.2	<0.01	0.2	12	<0.01	<0.05	<0.05	3.1	<0.001	<0.05	12	0.45	2	<0.005	9	0.1	0.1